SERVICE MANUAL

BE-5 CHASSIS

	MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-20WS1A RM-836 Italian SCC-K31F-A	KV-20WS1F	RM-836	OIRT	SCC-K35M-A
KV-20WS1B RM-836 French SCC-K36F-A	KV-20WS1F	RM-836	OIRT	SCC-K35L-A
KV-20WS1D RM-836 AEP SCC-K32H-A	KV-20WS1U	J RM-836	UK	SCC-K33D-A
KV-20WS1E RM-836 Spanish SCC-K30H-A				









ITEM MODEL	Television System	Channel Coverage	Colour System
Italian	B/G/H	VHF: E2-E12, UHF: E21-E69 A-H2, U1-U10, M1-10 CABLE TV: S01-S05, S1-S20 HYPER: S21-S41	PAL, SECAM NTSC 3.58,4.43 (only video in)
French	B/G/H, D/K, I, L	VHF: E2-E12, UHF: B21-B69, HYPER: S1-S41 D/K R1-R12, R21-R69 I UHF: B21-B69 L F2-F10, B-Q, F21-F69 CABLE TV: S01-S05, S1-S20	PAL, SECAM NTSC 3.58,4.43 (only video in)
AEP	B/G/H, D/K	VHF: E2-E12, UHF:E21-E69, HYPER: S1-S41 D/K R1-R12, R21-R69 CABLE TV: S01-S05, S1-S20	PAL, SECAM NTSC 3.58,4.43 (only video in)
Spanish	B/G/H, D/K	VHF: E2-E12, UHF:E21-E69, HYPER: S1-S41 D/K R1-R12, R21-R69 CABLE TV: S01-S05, S1-S20	PAL, SECAM NTSC 3.58,4.43 (only video in)
OIRT	B/G/H, D/K	VHF: E2-E12, UHF:E21-E69, HYPER: S1-S41 D/K R1-R12, R21-R69 CABLE TV: S01-S05, S1-S20	PAL, SECAM NTSC 3.58,4.43 (only video in)
UK	I	UHF: B21-B69	PAL NTSC 3.58,4.43 (only video in)

MODEL	20WS1A	20WS1B	20WS1D	20WS1E	20WS1K	20WS1R	20WS1U
Power Consumption	70W	70W	70W	70W	70W	70W	92W

SPECIFICATIONS

Picture Tube Super Trinitron Wide

Approx. 49 cm (20 inches) (Approx. 46 cm picture measured diagonally) 86° deflection

Rear/Front Terminals

[REAR]

21-pin Euro connector (CENELEC standard)

- Including audio/video input, RGB input

2 Video input - phono jack

Audio inputs - phono jacks S S Video input - 4 pin jacks

Headphone jack - stereo minijack

Sound output

Left/Right 2x8W (music power)

2x4W (RMS)

Sub-woofer 20W (music power)

10W (RMS)

Dimensions 519x417x401 mm approx.

Weight Approx. 19 kg

Supplied accessories RM-836 Remote Commander (1)

IEC designated batteries (2)

Other features TELETEXT, Fastext,

NICAM (KV-20WS1B/20WS1E/

20WS1U only)

[RM-836]

Power requirements 3V dc (2 batteries) R6 (size AA) Dimensions Approx. 210x45x24 mm (w/h/d)

Weight Approx. 90g

(Not including battery)

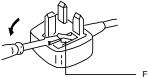
Design and specifications are subject to change without notice.

Model name	KV-20WS1A	KV-20WS1B	KV-20WS1D	KV-20WS1E	KV-20WS1K	KV-20WS1R	KV-20WS1U
Item							
PIP	OFF						
MPIP	OFF						
Rotation Coil	OFF						
VM Set (Velocity Modulation)	OFF						
Scart 1	ON						
Scart 2	OFF						
Front in (3)	ON						
AKB in 16:9 mode	ON						
TXT	ON						
FLOF	ON						
TOP	ON						
Norm B/G/H	ON	ON	ON	ON	ON	ON	OFF
Norm I	OFF	ON	OFF	OFF	OFF	OFF	ON
Norm D/K	OFF	ON	ON	ON	ON	ON	OFF
Norm L	OFF	ON	OFF	OFF	OFF	OFF	OFF
Language Preset	Italian	French	German	Spanish	OIRT	OIRT	English

WARNING (KV-20WS1U only)

The flexible mains lead is supplied connected to a **B.S. 1363** fused plug having a fuse of **5 AMP** capacity. Should the fuse need to be replaced, use a **5 AMP FUSE** approved by **ASTA** to **BS 1362**, ie one that carries the mark.

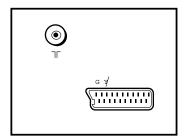
IF THE PLUG SUPPLIED WITH THIS APPLIANCE IS NOT SUITABLE FOR YOUR SOCKET OUTLETS IN YOUR HOME. IT SHOULD BE CUT OFF AND AN APPROPRIATE PLUG FITTED. THE PLUG SEVERED FROM THE MAINS LEAD MUST BE DESTROYED AS A PLUG WITH BARED WIRES IS DANGEROUS IF ENGAGED IN A LIVE SOCKET OUTLET. When an alternative type of plug is used it should be fitted with a 5 AMP FUSE, otherwise the circuit should be protected by a 5 AMP FUSE at the distribution board.

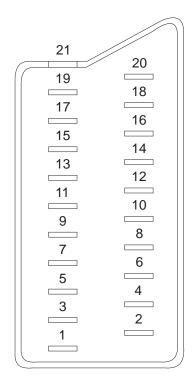


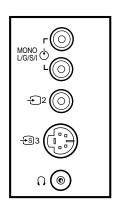
How to replace the fuse. Open the fuse compartment with the screwdriver blade and replace the fuse.

- FUSE

21 pin connector ($\stackrel{\dots}{-}$, $_{Y}$)







Pin No.	1	2	4	Signal	Signal Level		
1	0	0	0	Audio output B (Right)	Standard level : 0.5V rms Output impedance : Less than 1k ohms*		
2	0	0	0	Audio input B Standard level : 0.5V rms (Right) Output impedance : More than 10k ohms*			
3	0	0	0	Audio output A (Left)	Standard level : 0.5V rms Output impedance : Less than 1k ohm*		
4	0	0	0	Ground (Audio)			
5	0	0	0	Ground (Blue)			
6	0	0	0	Audio input A (Left)	Standard level : 0.5V rms Output impedance : Less than 10k ohm*		
7	0	•	•	Blue input	$0.7 \pm 3 \text{dB}$, 75 ohms, positive		
8	0	0	0	Function select (AV control)	High state (9.5 - 12V) : Part mode Low state (0 - 2V) : TV mode Input impedance : More10k ohms Input capacitance : Less than 2nF		
9	0	0	0	Ground (Green)			
10	0	0	0	Open			
11	0	•	•	Green			
12	0	0	0	Open			
13	0	0	0	Ground (Red)			
14	0	0	0	Ground (Blanking)			
	0	_	_	Red input	0.7 ± 3dB, 75 ohms, positive		
15	_	0	0	(S signal) croma input	$0.7 \pm 3 \text{dB}$, 75 ohms, positive		
16	0	•	•	Blanking input (Ys signal)	High state (1 - 3V) Low state (0 - 0.4V) Input impedance : 75 ohms		
17	0	0	0	Ground (Video output)			
18	0	0	0	Ground (Video input)			
19	0	0	0	Video output	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)		
20	0	_	_	Video input	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)		
20	_	0	0	Video input Y (S signal)	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)		
21	0	0	0	Common ground (plug, sheild)			

0 0			
 Connected 	Not Connected (Open)	^	at 20Hz - 20kHz

Pin No.	Signal	Signal Level
1	Ground	
2	Ground	
3	Y (S signal) input	1V ± 3dB 75 ohm, positive Sync. 0.3V -3 + 10dB
4	C (S signal) input	0.3V ± 3dB 75ohm, positive Sync.

TABLE OF CONTENTS

	<u>Section</u>	<u>Title</u>	<u>Page</u>	7	<u>Section</u>	<u>Title</u>	<u>Page</u>
1.	GEN	ERAL		5.	DIA	GRAMS	
	Get	ting Started	7		5-1.	Block Diagrams	23
	TV	Operation	9		5-2.	Circuit Boards Location	28
		nu Operation			5-3.	Schematic Diagrams and Printed Wiring Boards	
		etext Operation				* A Board	
	Opt	ional Connections	13			* H Board	36
		litional Information				* C Board	38
						* U Board	42
2.	DISA	SSEMBLY				* K Board	42
	2-1.	Rear Cover Removal	14		5-4.	Semiconductors	
		Service Position			5-5.	IC Block Diagrams	45
	2-3.	Picture Tube Removal	15				
				6.	EXP	LODED VIEWS	
3.	SET-	UP ADJUSTMENTS			6-1.	Chassis	47
	3-1.	Beam Landing	16		6-2.	Picture Tube	48
		Convergence	17				
	3-3.	Screen (G), Drive, White Balance,		7.	ELE	CTRICAL PARTS LIST	49
		Sub Colour and Sub Brightness	18				
	3-4.	Focus	18				
4.	CIRC	CUIT ADJUSTMENTS					
		Electrical Adjustments	19				
		Test Mode 2:					
		BE-5 Self Diagnostic Software					
		· ·					

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.

THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY SHADING AND MARK \(\frac{1}{2} \) ON THE
SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND, IN THE PARTS
LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE
COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS
APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS
PUBLISHED BY SONY.

ATTENTION

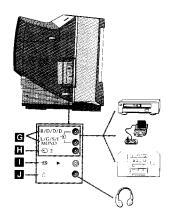
APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

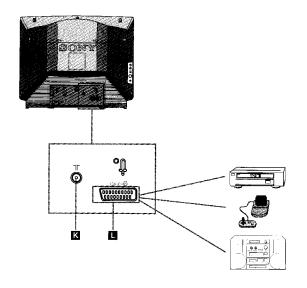
ATTENTION !!

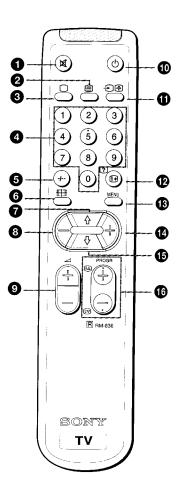
AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÁSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÈS PAR UNE TRAME ET PAR UNE MARQUE \(\frac{1}{2}\) SUR LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE PUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY.







6

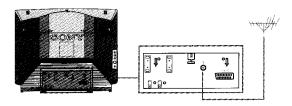
Getting Started

Please open the flaps at the front and at the back of the Instruction Manual for illustrations of the TV set and the Remote Commander. Letters in boxes refer to the buttons on the TV set, numbers in circles to the buttons on the Remote Commander.

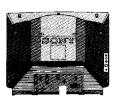
Step 1: Connecting the Aerial

(If you connect a VCR, skip to step 2).

Connect an external aerial to the socket \(\textbf{K} \) at the rear of the TV.



Step 2: Connecting a VCR



We recommend that you tune in the VCR signal to programme number "0". For details see "Presetting Channels Manually" on page 13.

Step 3: Connecting the Mains Plug

Connect the mains plug of the TV set to the electrical outlet (220-240 V AC, 50 Hz).

Step 4: Inserting the Batteries into the Remote Commander



Always remember to dispose of used batteries in an environmental friendly way.

Step 5: Remote Commander Overview

Refer to Symbol	Effect	Refer to Page	
0 ×	Sound on/off button	6	
2 3	Teletext on button	17	
8 O	TV button / TV power on Teletext off button	5 17	
4 1 9, 0	Number buttons	5	
6 -/	Double digit entering button	5	
6 ₩	Screen Format	6	
9 , 3 , 4 , 5	MENU: Cursor buttons to operate Menu functions TELETEXT: Fastext buttons	7 17	
9 🛮 +/-	Volume control	6	
10 ()	Standby button	5	
0 -9 -9	Input mode button Teletext: Freezing the subpage	18 17	
1 9	On screen display button Teletext: Reveal button	6 17	
MENU	Menu on/off button	7	
16 PROGR +/- 19 , 19	Programme buttons Teletext: Page up/down buttons	5 17	

2 | Getting Started Getting Started

Step 6: Presetting Channels Automatically

TV searches for all available channels. If manual tuning is preferred see Menu option - Presetting Channels Manually (page 13).



- 1 Depress power switch □ A on TV set.
- Press and hold on TV set for 2 seconds. Auto tuning starts and screen shows.
- Channels are automatically stored as follows:

Programme 1 BBC1

Programme 2 BBC2

Programme 3 ITV

Programme 4 CH4 or S4C.

Programme 5 CH5

- When Auto tuning stops, the programme position 1 is displayed.
- Programme names are automatically taken from Teletext if available. With that function, you can easily identify which channel you are watching.
- If you connect a VCR via the aerial cable, set the VCR to its test signal or to play mode before auto-tuning.
- You may have to exchange the programme positions, if there are duplicated signals from local transmitters.

TV Operation

This section explains functions used whilst watching TV. Most operations are carried out using the Remote Commander (numbers in circles). All basic functions are also available on the TV set (letters in boxes).

То	Press
Switch on	• ① 🛕 on TV
Switch off temporarily	• & 🔞 TV is now in standby mode, indicator & 🖪 on TV lights.
	Auto Standby (only in TV mode): After 15 minutes without a TV signal and without pressing any button, the TV switches automatically into standby mode
Switch on again	• ③, PROGR +/- G or any number button
Switch off completely	• ① A on TV To save energy we recommend switching off completely when TV is not in use.
Select programmes	• PROGR +/- 1 C or number buttons 4 For double digit numbers press -/ 5 then the number, e.g. for 23, press -/ 5 then 2 and 3.

То	Press
Display the programme number	• 🕞 🔁 Press again to make programme number disappear.
Adjust the volume	• <u>-</u> +/- 9 D
Mute the sound	• 4 1 Press again to restore sound.
View video input	• 🕣 🛈 🖪 Press 🗀 🕄 to return to TV programme.
Change the screen format	• Press repeatedly ☐ 6 to change the screen format as follows: Zoom 1 (imitation of 16:9 for 4:3 broadcasts) → Zoom 2 (imitation of 16:9 for movies broadcast in cinemascopic format) → Zoom 2 1 (whilst in Zoom 2 mode, press the green button 10 to scroll the screen up to show the subtitles. Press the blue button 15 to return to Zoom 2). Zoom 3 (for 16:9 broadcast) → 4:3 (normal format).

Menu Operation

Using the Menu Buttons

Use the following buttons on Remote Commander to control Menu screen.

- 1 Press MENU **1** to switch the Menu Screen on/off.
- MENU
- **2** Use the coloured buttons as follows:
- Green **7** Scroll up

Red – **8** decrease/select



Yellow + 10 increase/confirm(OK)

Blue **15** Scroll down

Note:

In case of error press MENU 18 twice and start again.

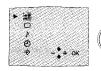
Using "Select Modes"

You can select different preset optimized picture and sound settings.

1 Press MENU **3**.

MENU

Press yellow (OK) 10
to select 12 (Select Modes).





- Press green **7** or blue **1** to select the desired mode:
 - individual settings made in Picture and Sound Adjustments
 - □, for video games
 - for films
 - **太** for sports
 - ecological (picture and brightness are set to optimal energy saving levels).
- Press MENU 18 to return to normal TV screen. The mode selected in step 3 is now stored.

Adjusting the Picture and Sound

Although picture and sound are adjusted at the factory, you can adjust them to suit your own taste.

- 1 Press MENU **13**.
- **2** Press green **7** or blue **1** to select **■** (Picture) or \triangleright (Sound) and press yellow **1** (OK).
- **3** Press green **7** or blue **6** to select the item you wish to change.

PICTURE CONTROL

Symbol	Item	- Effect	+
•	• Picture	Less	More
3	• Colour	Less	More
o	• Brightness	Darker	Brighter
Φ	• Sharpness	Softer	Sharper
№	 Hue control (only for NTSC video signals) 	Reddish	Greenish
AUTO 16:9	 Automatic selection of the screen format according to the signal broadcast 	ON	OFF
→• ←	• Reset	Reset to factory preset picture level	•
an Di	The respective sympicture and sound in the sound ind		



SOUND CONTROL

Symbol	Item	- Effect	+
	MONO/STEREO	A: channel 1 Stereo	B: channel 2 Mono
8	• Treble	Less	More
2:	• Bass	Less	More
	• Balance	More left	More Right
MEGABASS	• Bass enhancement	ON	OFF
c:	• Headphones Volume MONO/STEREO	Less A: channel 1 Stereo	More B: channel 2 Mono
→• ←	• Reset	Reset to factory preset sound lev	⁄el

• The respective symbol appears, indicating the picture and sound mode you selected.



- **4** Press red **8** or yellow **6** to change levels.
- **5** Press MENU **1** to return to normal TV screen.
- When receiving a NICAM or DUAL programme:
 - 1. Nicam Stereo/Monoaural: □□ or □□ appears on the screen.
 - 2. Nicam bilingual/Dual: □A◁ or □B◁ appears on the screen.

Presetting Channels Manually

Up to 100 programme positions are available for presetting channels.

- 1 Press MENU **1**
- **2** Press green **7** or blue **1** to select **⇒** and press yellow (OK) 4.



3 Select programme number using PROGR +/- **6 C** or the number buttons **4**.



- **4** Press green **7** or blue **6** to select tuning bar (IIII...) and press red **3** or yellow **10** to start channel search. When a channel is found the tuning bar stops moving and you see the picture.
- 5 If you want to store, press green **②** or blue **③** to select ◇ and press yellow (OK) **④**. If you don't want to store, press red **③** or yellow **⑥** to continue
- **6** Repeat steps 3 to 5 for all other channels.
- **7** Press MENU **13** to return to normal TV screen.

Skipping Programme Positions

You can skip unused programme positions when selecting channels with the PROGR +/- 6 buttons.

- 1 Press MENU **(B**).
- **2** Press green **7** or blue **6** to select ⇒ and press vellow (1).



3 Select programme number you want to skip using PROGR +/- 6 C or number buttons 4.



- **4** Press green **7** or blue **6** to select Coo and press yellow (OK) **6**.
- **5** Press green **7** or blue **16** to select ♦ and press yellow (OK) **14** to store.

- **6** Repeat steps 3 to 5 for other unused programme positions.
- **7** Press MENU **13** to return to normal TV screen.

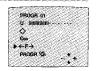
Fine-Tuning Channels

You can fine tune a stored channel.

- 1 Select the channel you wish to fine tune.
- 2 Press MENU ®.
- **3** Press green **7** or blue **1** button to select ⇒ and press yellow (OK) 1.



4 Press green **?** or blue **⑤** to select **←**F **→** and use red **③** or yellow **⑥** to adjust tuning.



- **5** Press green **7** or blue **15** to select ♦ and press yellow (OK) **14** to store.
- **6** Press MENU **13** to return to normal TV screen.

Exchanging Programme Positions

After tuning you may wish to rearrange the programme positions.

- 1 Press MENU **3**.
- **2** Press green **7** or blue **1** button to select **⇒** and press yellow (OK) 10.



Press green **②** or blue **③** to select PROGR ♣ and press yellow (OK) **④**.



4 Press red **3** or yellow **6** to select the first programme position.



- **5** Press the blue **6** button.
- **6** Press red **3** or yellow **10** to select the second programme position.
- **7** Press blue **6** to select and press yellow (OK) **6** to exchange.
- **8** Repeat steps 4 to 7 for other programme positions.
- **9** Press MENU **18** to return to normal TV screen.

3 Input three digits for the page number using the programme number buttons **4** or **1 b** / **1 1 b** (next or previous page).

1 Select the channel which carries the teletext service you wish to receive.

4 Press **3** to switch off teletext.

2 Press **2** to switch on teletext.

Note:

Teletext errors may occur if the broadcasting signals are weak.

Using Other Teletext Functions

Superimposing teletext on the TV

Press **2** once in teletext mode or twice in TV mode to superimpose teletext on the TV screen.

Press
again to cancel superimposing.



Press 🔁 🛈 (HOLD) to freeze the subpage. Freezing the page prevents the information that is displayed from being updated.

Press 🔁 🛈 to cancel HOLD and allow update to continue.

Revealing concealed information (eg: answers to a quiz).

Press (?) 12 to reveal information.

Press again to conceal the information.

Using colour buttons to access pages (Fastext)

When the colour coded menu appears at the bottom of a page, press the colour button (green, red, yellow or blue) **7846** to access the corresponding page.

Connecting Optional Equipment

There is a wide range of optional equipment you can connect to your TV. Refer to the illustrations on the back flap page of this manual.

Symbol

Acceptable input signals

-Ð/-Ð2 G H -€S) [[

 Normal audio/video and S video through the phono jacks.

⊸ത് 🔲

• Normal audio/video and RGB through Euro AV connector.

Note: Make sure not to switch on the equipments connected to the lateral connectors 12 H and 15 I at the same time.

Selecting the Input

Press • • • repeatedly to select the desired video source.

Press 3 to return to normal TV operation.

Music Mode

Press • ① F repeatedly to select AV2 if you want to use the TV as an audio amplifier (with the lateral audio inputs → G).

After few seconds the symbol \$\infty\$ appears on the screen and Megabass function is activated automatically.

Note:

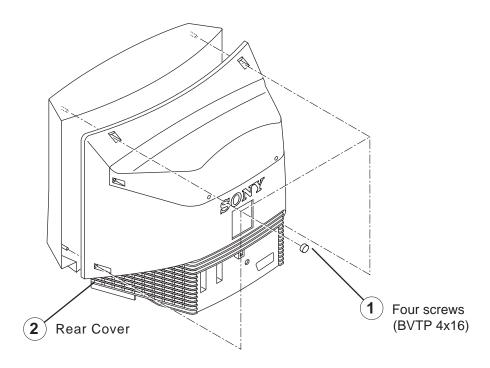
You can set Megabass off through sound adjustment menu (page 9).

Connecting Headphones

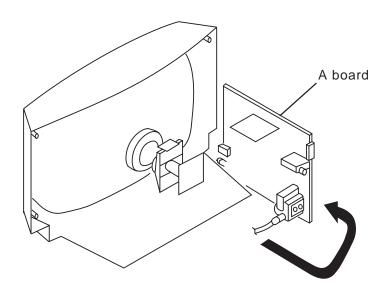
Plug in the headphones to the Ω J socket on the lateral of the TV set.

SECTION 2 DISASSEMBLY

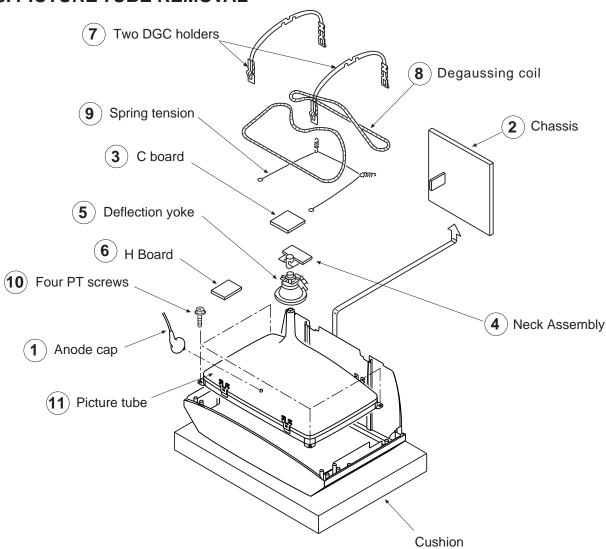
2-1. REAR COVER REMOVAL



2-2. SERVICE POSITION



2-3. PICTURE TUBE REMOVAL

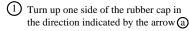


REMOVAL OF ANODE-CAP

Note: Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT, after removing the anode.

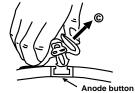
* REMOVING PROCEDURES.







(2) Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow (b)



When one side of the rubber cap is separated from the anode button, th

separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ©

HOW TO HANDLE AN ANODE-CAP

- 1) Don't damage the surface of anode-cap with sharp shaped material!
- (2) Don't press the rubber hardly not to hurt inside of anode-caps! A metal fitting called as shatter-hook terminal is built into the rubber.
- 3 Don't turn the foot of rubber over hardly! The shatter-hook terminal will stick out or damage the rubber.





SECTION 3 SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with the rated power supply voltage, unless otherwise noted.

The Contrast and Brightness controls should be set as follows unless otherwise noted:

Perform the adjustments in the following order:

- 1. Beam Landing
- 2. Convergence
- 3. Screen (G2), Drive, White Balance, Sub Colour and Sub Brightness.
- 4. Focus

Note: Test Equipment Required.

- 1. Colour bar/Pattern Generator
- 2. Degausser
- 3. DC Power Supply
- 4. Digital multimeter
- 5. Oscilloscope

Preparation:

- In order to reduce the influence of external magnetic forces on the picture tube, face the TV set in an easterly or westerly direction.
- Turn the power switch for the unit ON and erase the magnetic force using a degausser.

3-1. BEAM LANDING

Demagnetize with a degausser.

- 1. Input an all white raster signal from the pattern generator. CONTRAST $\}$ normal BRIGHTNESS
- 2. Switch the raster signal of the pattern generator to Red.
- 3. Move the deflection yoke backward, and adjust with the purity control so that Red is at the centre and the Blue and Green are evenly spaced at the sides. see (Fig. 3-1 3-3)
- 4. Move the deflection yoke forward, and adjust so that the entire screen becomes Red. (Fig. 3-1)
- 5. Switch the raster signal to Blue and then Green to confirm the condition.
- 6. When the position of the deflection yoke has been determined, tighten it with the deflection yoke mounting screw.
- 7. When the landing at the corners is not correct, adjust by using disk magnets. (Fig. 3-4)

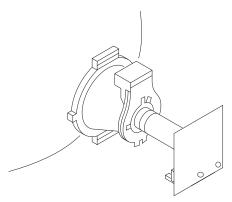


Fig. 3-1



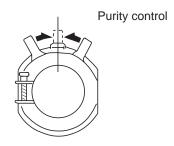


Fig. 3-3

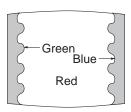
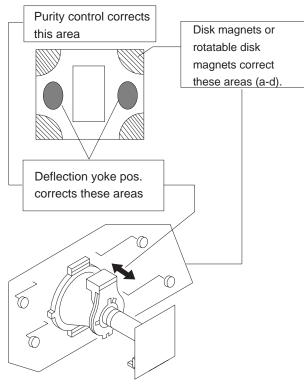


Fig. 3-4



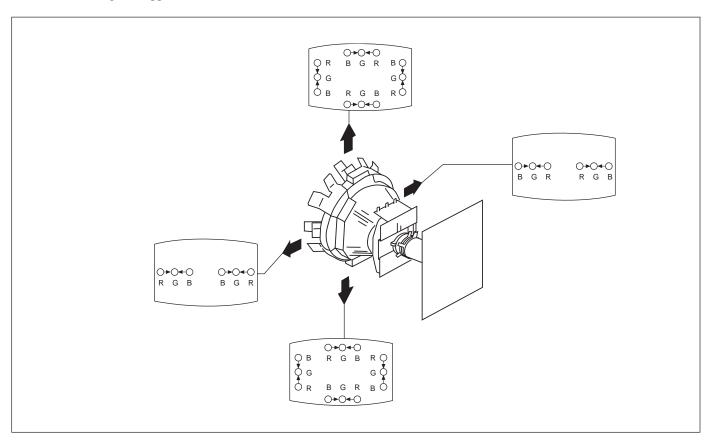
3-2. CONVERGENCE

(1) Static Convergence

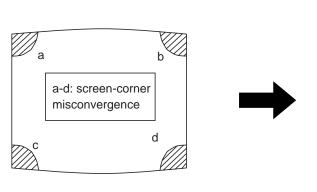
- 1. Input a dot pattern from the pattern generator and adjust the picture to normal.
- 2. Loosen the magnet stopper.
- 3. Adjust the red and blue dots using the pole magnet.
- 4. Converge the red and blue dots to the green dots using the 6 pole magnet.
- 5. Fasten the magnet stopper.

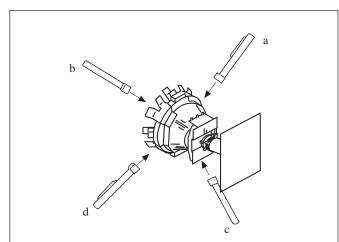
(2) Corner Convergence Adjustment

- 1. If the sides of the screen are misconverged then adjust by tilting the deflection yoke up, down or in the left or right direction.
- 2. Once the correct position has been determined secure the deflection yoke using the wedges.

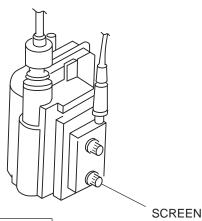


(3) Screen-corner Convergence.





3-3. SCREEN (G2), DRIVE, WHITE BALANCE, SUB COLOUR and SUB BRIGHTNESS.

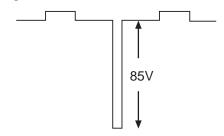


Screen (G2) setting

- 1. Input a 0 IRE (Black Level) signal from the pattern generator.
- 2. Enter into the Service Mode "Test" "Test" and 38.
- 3. Adjust the SCREEN VR until the Down arrow is displayed.
- 4. Adjust the SCREEN VR until the Down arrow just disappears.
- Press the TV Button on the Remote Commander to store the data.

Drive Level

- 1. Input a Video signal containing a small area of 100% white on a black background.
- 2. Connect an oscilloscope to Pin 7 of J701 (R OUT) on the C Board.
- 3. Set the Picture to maximum using "Test" "Test" and 01.
- 4. Enter into the Service mode (Adjust Menu).
- 5. Using the Blue and Green buttons select "RED HWB".
- 6. Using the Red and Yellow buttons on the Remote Commander adjust until the oscilloscope waveform has an amplitude of 85V.

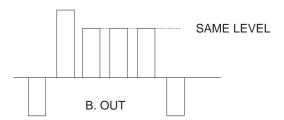


White Balance Adjustment

- 1. Input an all white pattern from the pattern generator.
- Adjust the Colour and Brightness controls to the standard level.
- 3. Enter into the Service Mode.
- 4. Adjust the Green HWB and Blue HWB so that the White Balance becomes optimum.

Sub Colour Adjustment

- 1. Input a PAL colour bar pattern from the pattern generator.
- 2. Connect an oscilloscope to Pin (3) of J701 (B OUT) on the C Board.
- 3. Enter into the Service Mode "Test" Test and 22.
- 4. Using the Red and Yellow buttons on the Remote Commander adjust until the oscilloscope waveform becomes as follows:



Note : If the TV is able to receive PAL and SECAM transmissions, repeat the above procedure using a Secam colour bar signal.

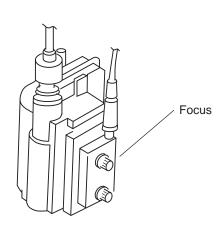
Sub Brightness Adjustment

- 1. Input a Philips pattern from the pattern generator.
- 2. Enter into the Service Mode "Test" "Test" and 23.
- 3. Using the Red and Yellow buttons on the Remote Commander adjust until the 0 IRE of the grey scale and the cut off are only slightly visible on the screen.

3-4. FOCUS

- 1. Receive a television broadcast.
- 2. Normalize the picture setting.
- 3. Adjust the focus control on the flyback transformer to focus the screen centre area properly.

Bring only the centre area of the screen into focus, the magenta-ring appears on the screen. In this case, adjust the focus to optimize the screen uniformly.



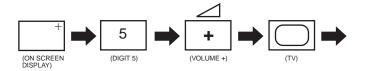
SECTION 4 CIRCUIT ADJUSTMENTS

4-1. ELECTRICAL ADJUSTMENTS

Service adjustment to this model can be performed with the supplied Remote Control Commander RM-836.

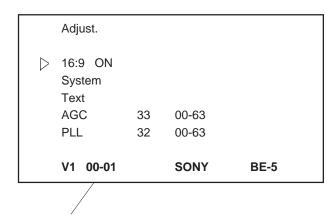
HOW TO ENTER INTO SERVICE MODE

- 1. Turn on the main power of the set and enter into stand-by mode.
- 2. Press the following sequence of buttons on the Remote Control Commander.



"TT-- " will appear in the top right corner of the screen Other status information will also be displayed.

3. Press the MENU button on the Remote Commander to obtain the menu on the screen.



Software version

- 4. Press the Blue (Next) or Green (previous) buttons to select the adjustment item from the table.
- 5. Press the Yellow (+) or Red (-) buttons to change the data as required.
- 6. Turn off the power to quit the service mode when adjustments are completed.

Range of adjustments available from the on screen menu system.

Adjustment	Set	Pango
Adjustment	Set	Range
V size	21	0 - 63
V breth	32	0 - 63
Pin amp	12	0 - 63
Para. tilt	43	0 - 63
V linear	42	0 - 63
Corner corr	05	0 - 63
H size	34	0 - 63
V pos	00	0 - 63
H phase	42	0 - 63
Blue	26	0 - 63
Green	32	0 - 63
Red	42	0 - 63
HV blk 1	00	0 - 63
HV blk 2	00	0 - 63
V cent	06	0 - 63
Zwei max	36	0 - 63
zwei min	18	0 - 63

4-2. TEST MODE 2:

TT -- Mode is available by pressing the Test button twice, O.S.D 'TT --' appears. The functions described below are available by pressing two digits. To release the 'TT --' mode, press 0 twice, press 'TEST', press 'TV' or switch the TV into Stand-by mode.

00	Switch 'TT—' Mode off.
01	Set picture level to maximum.
02	Set picture level to minimum.
03	Set volume to 35%.
04	Set volume to 50%.
05	Set volume to 65%.
06	Set volume to 80%.
07	Ageing condition (picture max., brightness max.).
08	Shipping condition (Analog values are RESET to factory setting, Prog 1 is selected, TT—mode switched off, Vol = 35%).
09	Dummy.
10	No function.
11	Dummy
12	Dummy.
13	Dummy.
14	Dummy.
15	Read factory setting from ROM to NVM - Reads Volume, Brightness, Picture, Hue, Sharpness and Colour values from ROM to the actual used values (Last Power Memory).
16	Save actual used values as reset values.
17	Enable / Disable Sharpness Operation.
18	Dummy.
19	RGB priority.
20	No function.
21	No function.
22	Sub Colour (Pal / Secam Different Stores)
23	Sub Brightness.
24	RGB priority on.

25	Destination Systems DKE.
26	Destination Systems I/U.
27	Destination System I/I'.
28	Destination BG only.
29	Dummy.
30-31	No function.
32	Picture level to 50%
33-35	No function.
36	Audio mute ON.
37	OSD off.
38	Enter G2 adjustment mode.
39	Sub-brightness
40	No function.
41	Re-initialise NVM.
42	Dummy.
43	Re-initialise Geometry settings.
44-47	Dummy
48	Set NVM testbyte to 44h in NVM.
49	Erase NVM testbyte
50	No function.
51	Toggle 60/100 programs.

Note : For Test Modes 41 - 51, it is necessary to ensure that the TV is set to Prog 59.

DEFLECTION SYSTEM ADJUSTMENT

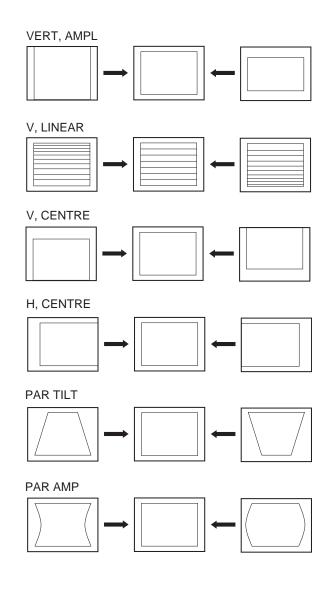
- 1. Enter into the service mode.
- 2. Using the Blue or Green buttons select the Adjust item.
- 3. Press the Yellow button to enter the adjustment submenu.
- 4. Select and adjust each item in order to obtain the optimum image.

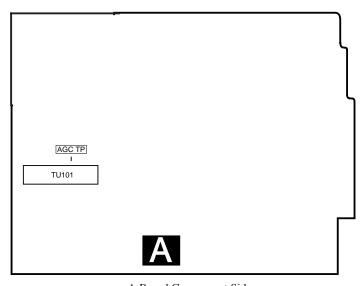
See Note on page 22

Adjustment	Set	Range
V size	21	0 - 63
V breth	32	0 - 63
Pin amp	12	0 - 63
Para. tilt	43	0 - 63
V linear	42	0 - 63
Corner corr	05	0 - 63
H size	34	0 - 63
V pos	00	0 - 63
H phase	42	0 - 63
Blue	26	0 - 63
Green	32	0 - 63
Red	42	0 - 63
HV blk 1	00	0 - 63
HV blk 2	00	0 - 63
V cent	06	0 - 63
Zwei max	36	0 - 63
zwei min	18	0 - 63

AGC ADJUSTMENT

- 1. Receive a signal of 63dBuV / 75 ohm terminated via the tuner socket.
- 2. Measure the voltage at AGC TP.
- 3. Adjust TU101 RV to obtain a voltage of 3.0 ± 0.3 V.





- A Board Component Side -

4-3. BE-5 SELF DIAGNOSTIC SOFTWARE

The identification of errors within the BE-5 chassis is triggered in 1 of 2 ways: -1: Bus busy or 2: Device failure to respond to I^2C . In the event of one of these situations arising the software will first try to release the Bus if busy (Failure to do so will report with a continuous flashing LED) and then communicate with each relevant device in turn to establish if a device is faulty. If a device is found to be faulty the relevant device number will be displayed through the LED by a Series of flashes which must be counted (See Table 1), Non fatal errors are reported with this method.

If a fatal error is found, the set will simply stay in whichever state it was when the error occurred, but if a non fatal error occurs the set will try to continue to operate.

To check error code it is necessary to use TV error display part number S-188-900-10.

Table 1

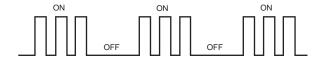
No. of Flashes	Notes	Error code	Description
-		00	No error.
2	(2)	30	Jungle nacks IIC bus1 transmisson.
3	(3)	31	Jungle FAULT (not OK) - flags.
4	(2)	32	Jungle - No H flyback.
-		33	Jungle - Stack overflow.
5	(4)	40	Sound Processor nacks IIC bus1 transmission.
6	(3)	91	Protection error: No V synchro.
7	(1)	10	NVM nacks IIC bus0 transmission.
8	(3)	20	Tuner nacks IIC bus1 transmission.
9	(1)	01	General IIC bus1 error (SDA1 or SCL1 are being held low.)
10	(3)	90	Protection input: X-ray protection.

- (1) Only reported on mains power up.
- (2) Reported on mains power up or exiting standby.
- (3) Reported at any time and result in the set reverting to standby mode.
- (4) Reported at any time and result in the set reverting to audio mute mode.

Note: Deflection System Adjustments should not be carried out whilst using an NTSC (60Hz) signal, or if the signal is unlocked.

Flash Timing Example: e.g. error number 3

Stby LED



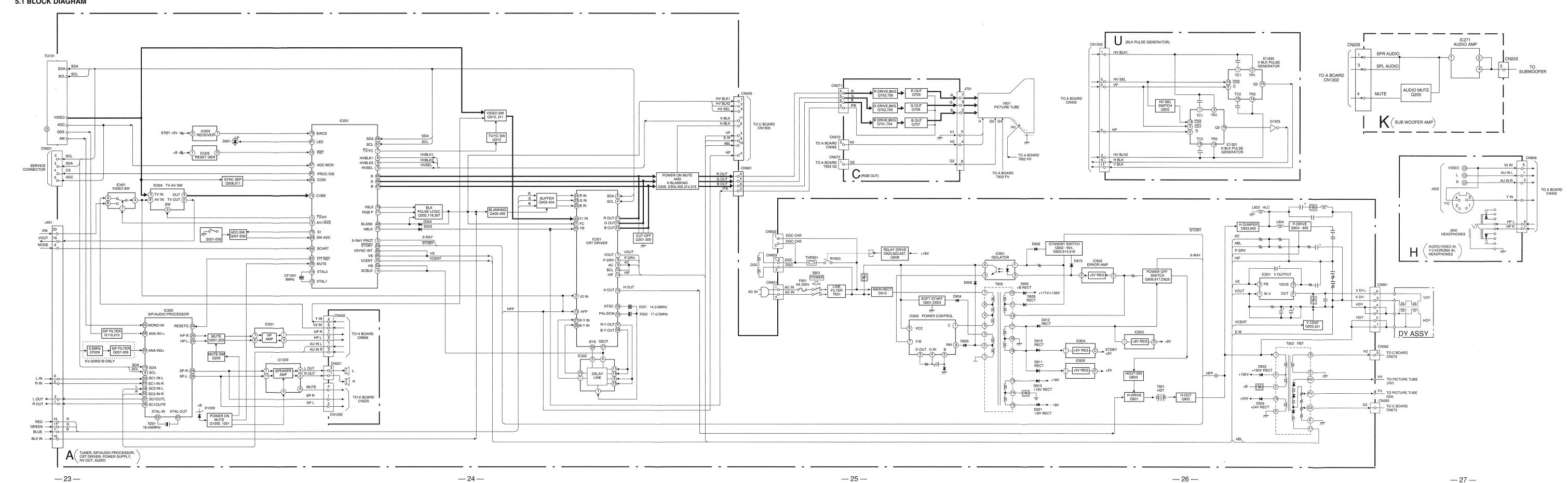
KV-20WS1 KV-20WS1

KV-20WS1 KV-20WS1

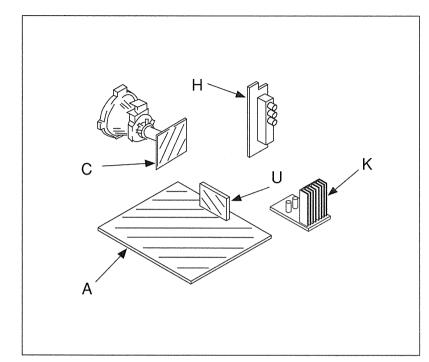
KV-20WS1

SECTION 5 DIAGRAMS

5.1 BLOCK DIAGRAM



5-2. CIRCUIT BOARDS LOCATION



5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

NUL	e.
•	All capacitors are in μF unless otherwise noted. pF: μμ
	50WV or less are not indicated except for electrolytic ar
	tantalums.

 All resistors are in ohms. k = 1000 , M = 1000K

• Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch: 5 mm
Rating electrical power ¼ W

• : nonflammable resistor.

• \triangle : internal component.

• : panel designation, or adjustment for repair. All variable and adjustable resistors have characteristic curve

B, unless otherwise noted.

: earth - ground.

: earth - chassis.

• # : no mounted.

Note: The components identified by shading and marked are critical for safety. Replace only with the part number specified.

Note: Les composants identifies par une trame et une marque i sont critiques pour la securite.

Ne les remplacer que par une piece portant le numero specifie.

<u> — 28 — </u>

KV-20WS1

KV-20WS1



— 30 **—**

Α	В	0	A	R	D	

A BOARD						
IC	Q803 Q804	E-6 H-6				
IC001 C-1 IC002 C-1 IC004 D-1	Q805 Q1200 Q1201	H-6 B-7 B-7				
IC005 E-1 IC200 B-3	DIOE	ÞΕ				
IC201 C-3 IC301 B-9 IC302 A-1 IC401 A-7 IC501 F-5 IC600 H-9 IC601 E-8 IC602 E-8 IC603 D-8 IC604 F-1 IC605 D-9 IC1200 D-7	D002 D003 D004 D005 D006 D007 D009 D011 D012 D014 D301 D302 D306	D-2 C-8 D-10 C-10 C-10 D-10 H-6 D-11 C-1 D-12 B-10 B-8 A-11				
TRANSISTO Q002 E-1 Q006 D-4 Q007 E-1 Q008 D-1 Q009 E-1 Q011 C-5 Q012 C-1 Q013 C-1 Q014 D-1 Q107 D-3 Q110 D-2 Q118 C-2 Q204 C-3 Q202 C-3 Q204 C-2 Q205 C-3 Q207 A-5 Q208 A-4 Q209 A-4 Q209 A-4 Q209 A-4 Q209 A-4 Q210 A-4 Q300 C-5 Q207 A-5 Q208 B-8 Q301 B-8 Q301 B-8 Q302 B-8 Q301 B-8 Q302 B-8 Q303 B-8 Q304 B-8 Q305 C-2 Q404 B-1 Q405 C-2 Q408 C-2 Q409 D-3 Q404 B-1 Q405 C-2 Q409 D-3 Q404 B-1 Q405 C-2 Q407 B-2 Q408 C-2 Q409 D-3 Q401 D-3 Q401 D-3 Q401 D-3 Q401 D-3 Q401 D-3 Q406 C-2 Q407 B-2 Q408 C-2 Q409 D-3 Q409 D-3 Q410 D-3 Q400 C-2 Q400 D-3 Q400 D-3 Q401 D-3 Q400 C-2 Q400 D-3 Q	D306 D307 D308 D338 D338 D401 D402 D403 D404 D405 D406 D407 D408 D409 D410 D411 D412 D413 D414 D415 D416 D417 D418 D421 D501 D602 D603 D604 D605 D606 D607 D608 D609 D610 D612 D613 D614 D615 D616 D617 D619 D620 D621 D622 D623 D626 D627 D801 D802 D623 D625 D626 D627 D801 D802 D621 D622 D623 D626 D627 D801 D802 D803 D805 D806 D807 D809 D1200	A-11 D-5 D-10 B-11 B-11 C-1-12 2-2 2-12 2-3 3-11 3-11 3-11 3-11 3				

TUNER, SIF/AUDIO PROCESSOR CRT DRIVER, POWER SUPPLY HV OUT, AUDIO

KV-20WS1

The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

KV-20WS1

Tr	ansistor \	/oltage Tab	le
Ref No	B Base	C Collector	E Emitte
Q002	-	5.0	-
Q006	4.6	0.7	4.8
Q007	-	5.0	0
Q008	5.0	5.0	4.5
Q009	0.1	5.0	4.5
Q011	0.6	5.0	0
Q012	-	5.0	-
Q013	-	5.0	-
Q014	-	5.0	-
Q110	4.6	8.0	4.0
Q118	•	-	0
Q201	-	-	0
Q202	•	-	0
Q204	4.7	8.0	4.0
Q205	4.6	8.0	4.0
Q210	3.5	8.0	2.9
Q300	0.3	0.6	0
Q301	0	2.0	0
Q302	0	2.1	0
Q303	0	2.2	0
Q304	0	2.0	0
Q305	0	2.1	0
Q306	0	2.2	0
Q310	1.7	5.0	3.0
Q311	3.6	5.0	3.0
Q312	-0.2	-	0
Q403	-	-	-
Q404	-	-	-
Q500	5.4	19.7	4.8
Q501	0.6	5.4	0
Q601	-0.3	-2.2	-2.6
Q602	68.0	8.0	68.4
Q603	0	67.7	0
Q604	0.6	0	0
Q608	-	15.8	0
Q801	0	120	0
Q802	-0.2	120	0
Q803	0.1	0.6	0
Q804	0.5	16.0	-
Q805	1.0	16.0	0.5
Q1201	3.5	7.0	2.8

A BOARD IC VOLTAGE TABLE

IC Voltage Table			IC Voltage Table			
Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)	
	2	2.0	-	1	1.6	
	3	2.2	1	2	4.7	
IC004	6	1.9	1	4	1.3	
	7	5.0	1	6-7	1.4	
	8	1.8	IC302	8	0.2	
	7	4.8	1	10-11	1.4	
	9	3.1	1	13	4.7	
	10	3.1	1	14-15	1,1	
	18	4.8	1	16	1.6	
	24	4.5	-	4	2.1	
	31-32	3.8	1	6	3.0	
	36-37	3.8	IC401	7	2.7	
	38	7.0	-	8	3.0	
	39	8.0	-	2	28.3	
IC200	40	7.0	1	3	1.4	
	42-45	3.8	IC501	5	20.0	
	49-50	3.8	1	6	28.6	
	52-53	3.8	-	7	2.6	
	54	2.6		2	15.8	
	55	3.8	IC1200	4	7.0	
	57	4.8	-	5	-16.0	
	58-59	1.5	 	L	<u> </u>	
	62-63	2.4	1			
	1	3.5	1			
	2	8.0	1			
IC201	3	3.5				
	5	0.5	1			
	8	0.5				
	1	1.6				
	2	0.8				
	3	1.3				
	4-5	3.3	_			
	6	0.9	_			
	7	1.5 -				
	8	1.0				
	9	1.3	_			
	10	2.3	_			
	11	. 1.6	_			
	12	0.3	_			
	13	0.4	-			
	14	1.0	4			
IC301	15	2.1	4			
	17-19	2.4	-			
	20	3.1	-			
	22-23	3.0	-			
	24	2.9	-			
	26-27	3.1 1.0	-			
	31	1.3	-			
	32-33	1.8	1			
	35	4.7	-			
	36	2.5	4			
	37	2.4	-			
	38	0.8	-			
	, 55	0.0				
	39	3.0	1			

A BOARD * MARK

DARD	* MARK										
	20WS1A	20WS1B	DWS1B 20WS1D 20WS		20WS1K	20WS1R	20WS1U	Greek Text			
5	_	100PF				_		_			
)1	SDA5255-A031	SDA5255-A031	SDA5255-A031	SDA5255-A031	SDA5255-A031	SDA5255-A032	SDA5255-A031	SDA5255A026			
00	MSP3400C- PP-C6	MSP3410D- PP-B3	MSP3400C- PP-C6	MSP3410D- PP-B3	MSP3400C- PP-C6	MSP3400C- PP-C6	MSP3410D- PP-B3	MSP3400C- PP-C6			
01	TUVIF (AEP)	TUVIF (FR)	TUVIF (AEP)	TUVIF (AEP)	TUVIF (AEP)	TUVIF (AEP)	TUVIF (UK)	TUVIF (AEP)			

T602 8-8 R818

All voltages are in V.

• Circled numbers are waveform references.

• : B+ bus.

: signal path. (RF)

Reference information

RESISTOR : RN METAL FILM

CAPACITOR : TA TANTALUM

: RC SOLID

FPRD NONFLAMMABLE CARBON

NONFLAMMABLE METAL OXIDE

NONFLAMMABLE CEMENT : RW NONFLAMMABLE WIREWOUND

ADJUSTABLE RESISTOR

: FUSE NONFLAMMABLE FUSIBLE

: LF-8L MICRO INDUCTOR

: PP POLYPROPYLENE

: MPS METALIZED POLYESTER

: ALT HIGH TEMPERATURE : ALR HIGH RIPPLE

• Voltages are dc with respect to ground unless otherwise noted.

Voltage variations may be noted due to normal production

: MPP METALIZED POLYPROPYLENE

: PS STYROL

: PT MYLAR

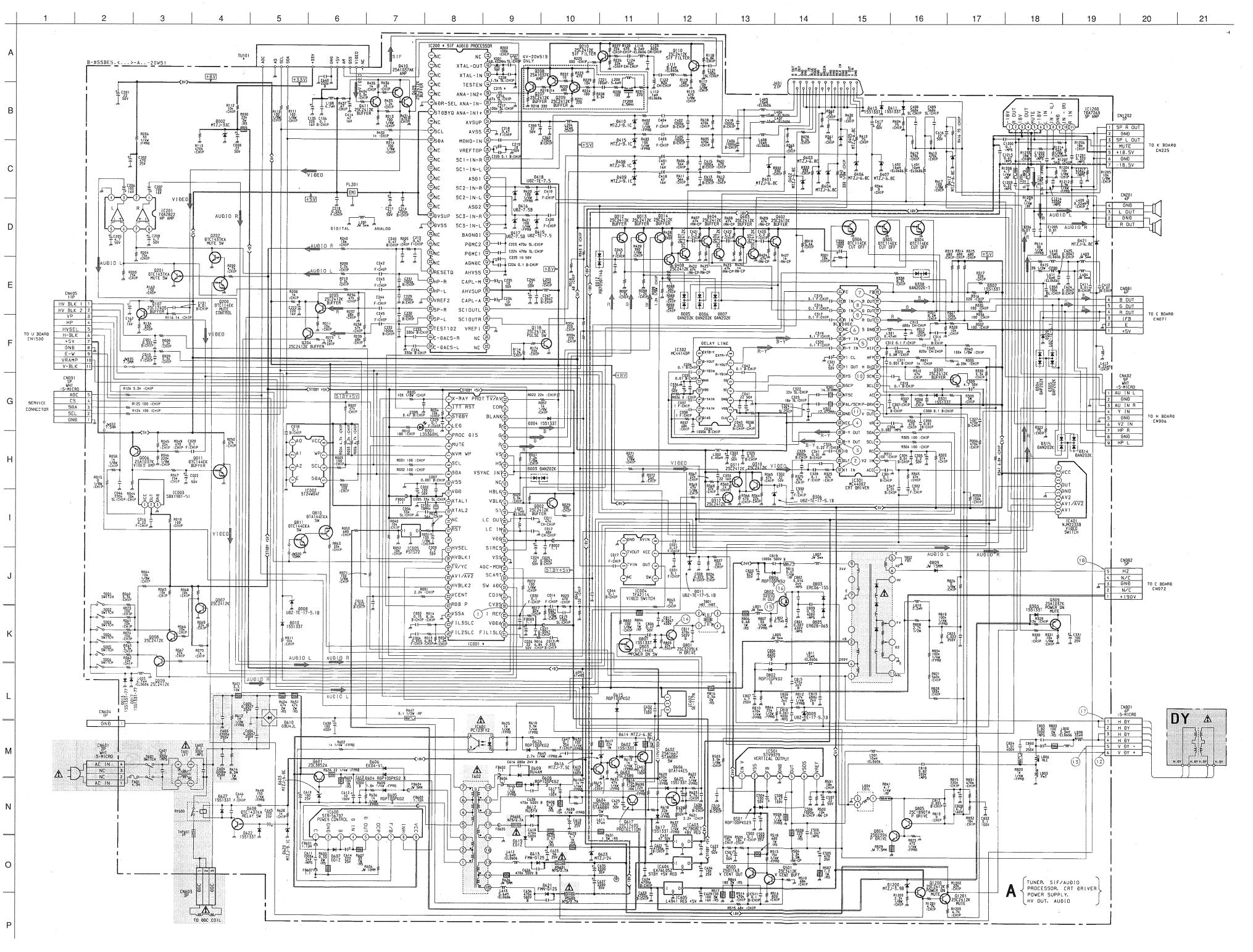
: ALB BIPOLAR

Readings are taken with a colour-bar signal input.

• Readings are taken with 10M digital multimeter.

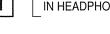
--- 31 ---

— 32 —



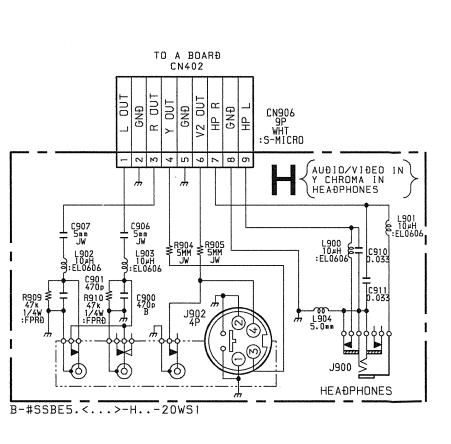
WAVEFORMS A B

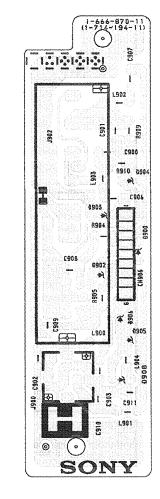
WAVEFORMS A BO	ARD			
1	2	3	4 PAL	4 SECAM/NTSC
		14141		
2.0 Vp-p (H)	1.0 Vp-p (H)	1.0 Vp-p (H)	1.0 Vp-p (H)	1.2 Vp-p (H)
5 PAL	5 SECAM	5 NTSC	6 PAL	6 SECAM
	J-J-J-		-1/1/11/1/11/1/1	-V/\p-\V\p-\V\p
1.0 Vp-p (H)	0.5 Vp-p (H)	1.1 Vp-p (H)	1.4 Vp-p (H)	0.7 Vp-p (H)
6 NTSC	7	8	9	10
-1/1/1/1/1/1/1/1/1				
1.5 Vp-p (H)	2.0 Vp-p (H)	2.3 Vp-p (H)	2.3 Vp-p (H)	0.8 Vp-p (H)
11)	(12)	13	14	(15)
1.8 Vp-p (H)	55 Vp-p (H)	8.4 Vp-p (H)	220 Vp-p (H)	10 Vp-p (H)
16	17)	18		
1.4KVp-p (H)	210 Vp-p (H)	24 Vp-p (H)		



AUDIO/VIDEO IN Y CHROMA IN HEADPHONES

H Board





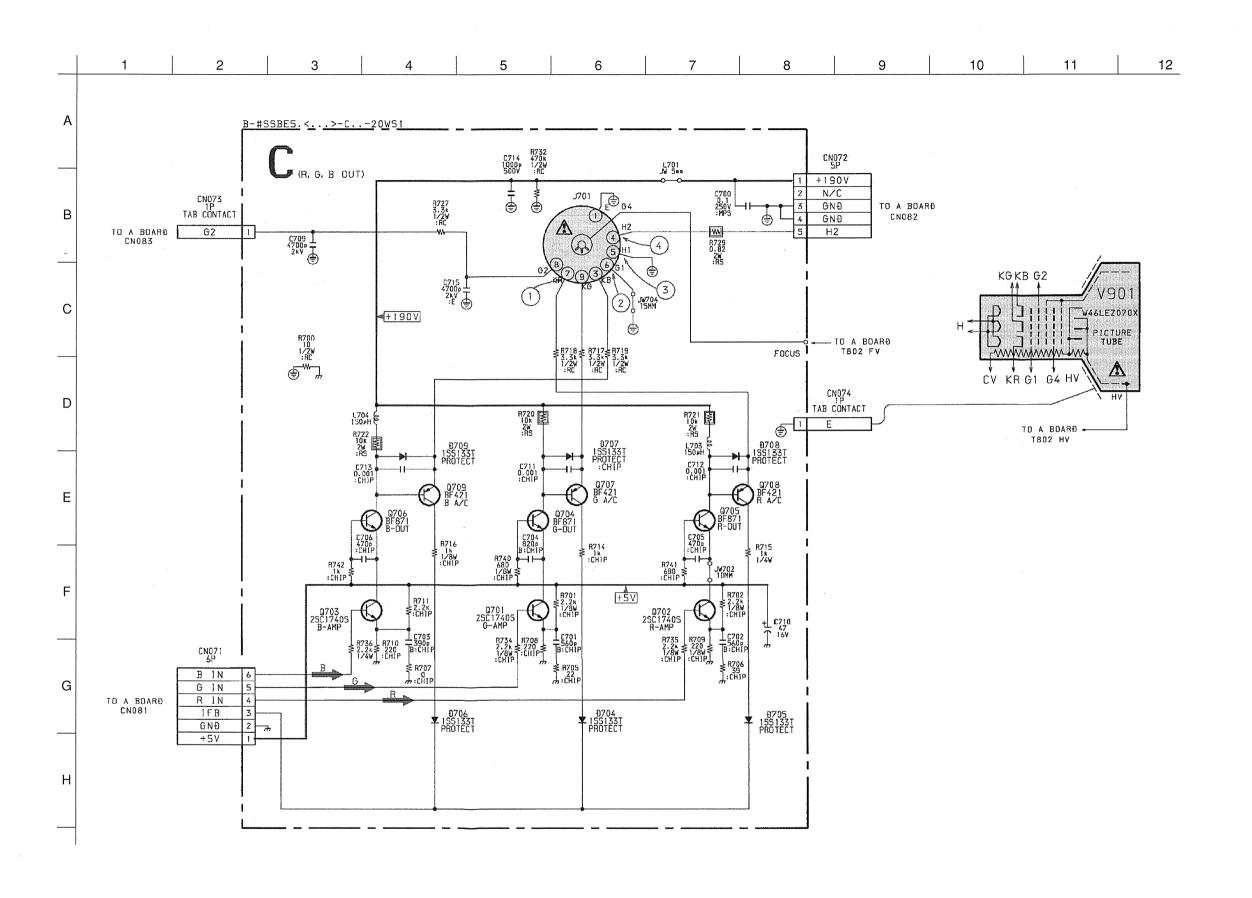
— 33 —

— 34 —

— 35 —

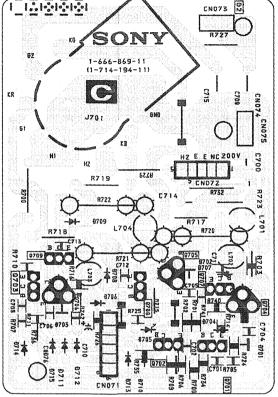
— 36 —

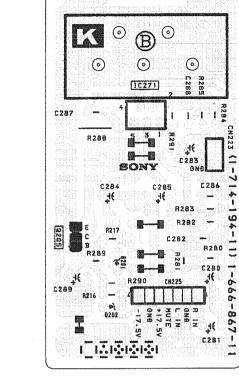
— 37 —

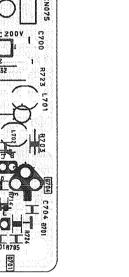




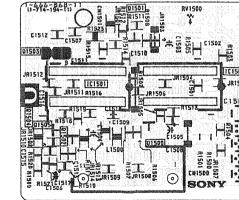
C Board

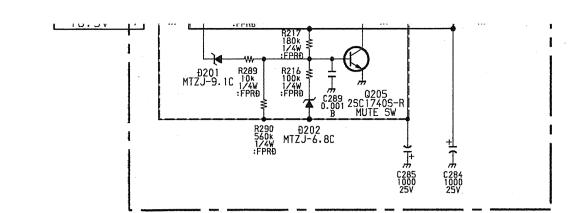


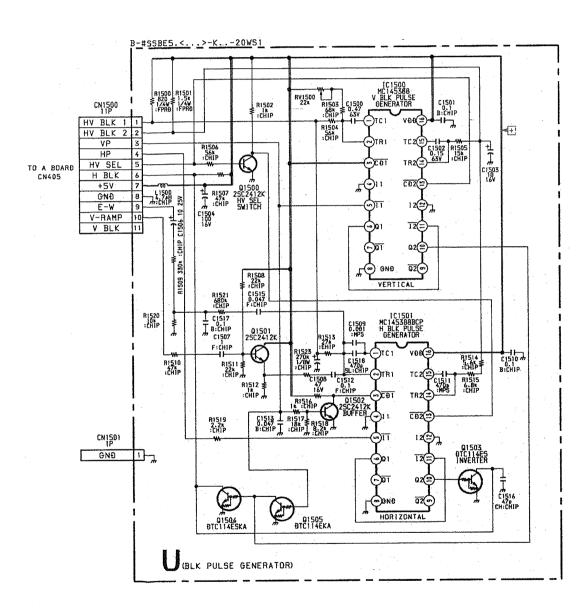




U Board

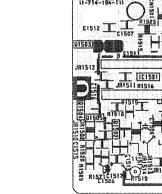






96 Vp-p (H)

23 Vp-p (H)



— 38 —

--- 39 ---

WAVEFORMS C BOARD

100 Vp-p (H)

MMM

85 Vp-p (H)

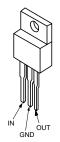
C BOARD TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table

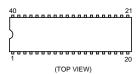
— 42 —

5-4. SEMICONDUCTORS

L4941BV LM7808CT MC7808CT TEA7605 TL750L05CLPR



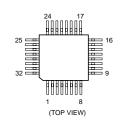
MC44002P



MC14538BCP MC44140P



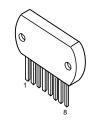
M27C512-90C1-BE5-1



MSP3400C-PP-C6 MSP3410B-PP-F7



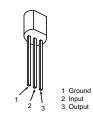
NJM2233BL



PC123F2 PC123FY2



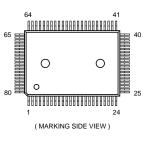
PST572D PST572D-T



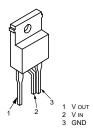
SBX1981-51



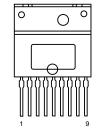
SDA5250M-C9-GEG



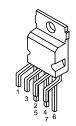
SE-135N SE135N-LF12



STR-S6707



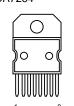
STV9379



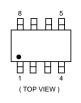
TDA2822M TEA2124



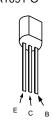
TDA7264



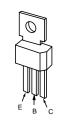
ST24W04FM6TR



BF421-AMMO 2SA1091-O



BF871-127



DTA144ESA DTA144ESA-TP DTC114EK DTC114EKA-T146 DTC143TKA-T146 DTC144EKA-T146-R 2SA1037K-T-146-R 2SA1162-G

2SC2412K-QR

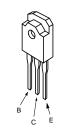
2SC2412K-T-146-R



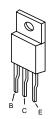
DTA114ES DTC114ES-TP



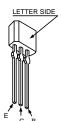
S2000N-16E305A



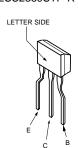
2SA1667 2SC3852A 2SD2394-EF



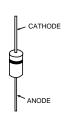
2SA933AS-QRT 2SA933AS-RT 2SC1740S-RT



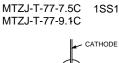
2SC2389STP-R



BYD33G BYD33G-AMMO ERC06-15S



ERA81-004TP1 MTZJ-33C ERA83-006 MTZJ-7.5B MTZJ-T-77-5.6C RD3.9ES-B2 MTZJ-T-77-6.8A RD5.6ESB2 MTZJ-T-77-6.8C MTZJ-T-77-33C



MTZJ-T-77-3.9B

RD6.8ES-B2 RD7.5ESB2 RD9.1ES-B3 1SS133T-77



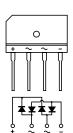
2SC2785-HFE



DAN202K DAN202K-T-146



GBU4JL-6088



ANODE

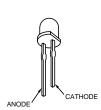
2SC2808STP-R



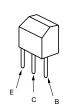
DAP202K DAP202K-T-146



LR5360HL



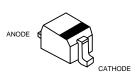
2SC3209LK-TP 2SD774-T-4 2SD774-34

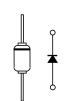


DTZ5.1B UDZ-TE-17-5.1B DTZ9.1 RD5.6S-B UDZ-TE-17-9.1B

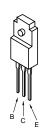
UDZ-TE-17-5.6B

1N4531-AMMO

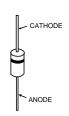




2SC4793 2SD1763A

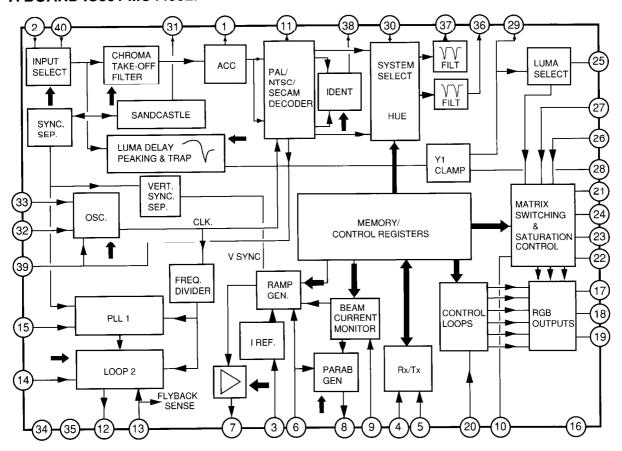


RGP10GPKG23 EG-1Z-V1 RU3YX-LF-C4 EL1Z ERD28-06S RU-3YX-V1 RU4AM-T3 ERD28-08S FMN-G12S 1SS292T-77

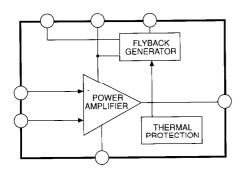


5-5. IC BLOCK DIAGRAMS

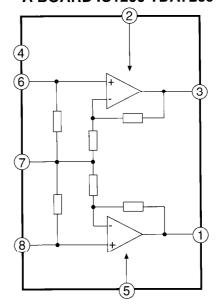
A BOARD IC301 MC44002P



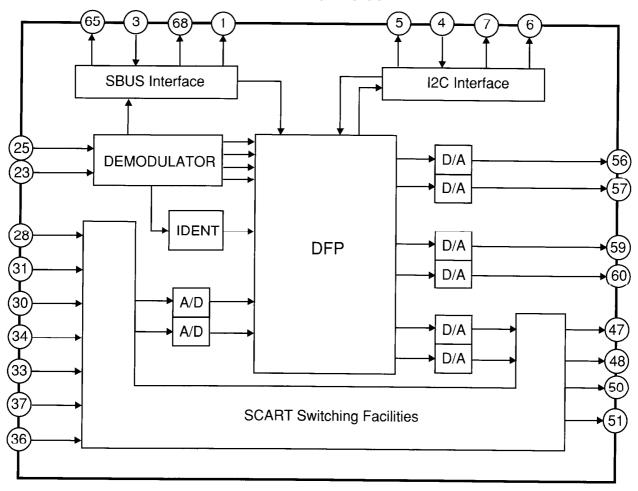
A BOARD IC501 STV9379

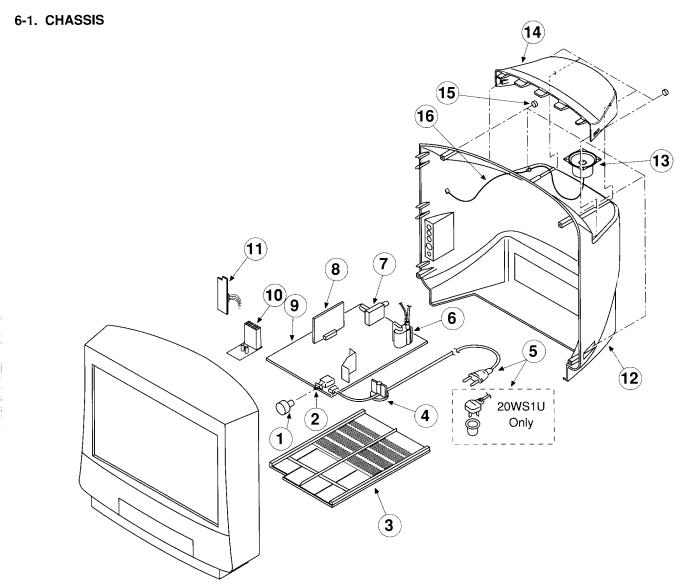


A BOARD IC1200 TDA7269

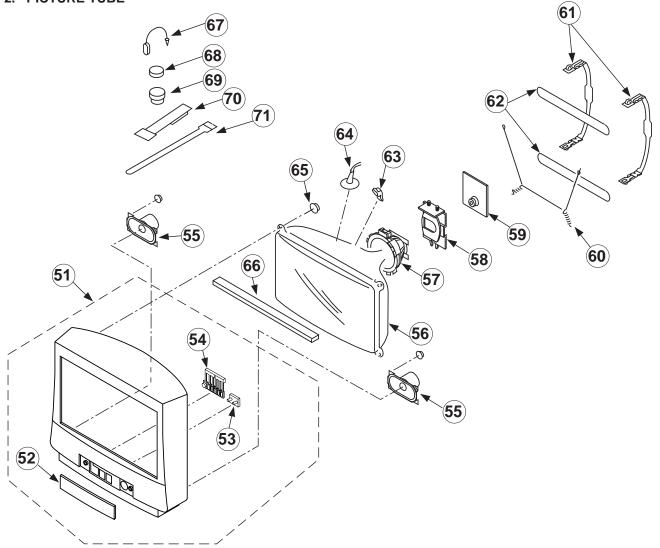


A BOARD IC200 MSP3400C-PP-C6/MSP3410B-PP-F7





6-2. PICTURE TUBE



The components identified by shading and marked $\hat{\Delta}$ are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque $\underline{\Lambda}$ sont critiques pour la securite.

Ne les remplacer que par une piece portant le numero specifie.

REF NO PAR	NO DESCRIPTION	REMARK REI	NO	PART NO	DESCRIPTION	REMARK
51 X-4200-2 52 4-203-82 53 4-203-08 54 4-203-09 55 1-505-80 56 A 8-737-80 57 A 8-451-45 58 A 1-452-78 59 *A-1638-1 60 4-369-31 61 1-416-42	HOLD WINDOW, ORNAMENT PROPERTY OF THE PROPERTY	64 65 66 281) (W46LEZ070X) 67 Y20GIAK) 68 E TUBE (NA-222) 69		1-416-425-11 3-704-495-01 1-540-007-11 4-365-808-01 4-203-128-01 4-308-870-00 1-452-032-00 1-452-094-00 X-4309-608-0 3-701-007-00	COIL, DEGAUSSING SPACER, DY CAP ASSY, HIGH-VOLTAGE SCREW (5), SELF TAPPING SHEET, BLOTTING CLIP, LEAD WIRE MAGNET, DISK; 10MM Ø MAGNET, ROTATABLE DISK; 15MM Ø PERMALLOY ASSY, CONVERGENCE BAND, BINDING	

SECTION 7

ELECTRICAL PARTS LIST

The components identified by shading and marked ⚠ are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque $\,\underline{\Lambda}\,$ sont critiques pour la securite.

Ne les remplacer que par une piece portant le numero specifie.

 Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

 All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 RESISTORS

• All resistors are in ohms

• F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS

COILS

 $\mathsf{MF}:\mathsf{mF},\;\mathsf{PF}\;:\;\;\mathsf{mmF}$

 $MMH:mH,\mu H:mH$



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION		REMARK
	*A-1632-654-A	A BOARD, COMPLETE (KV-20WS1	A)	C034 C035		CERAMIC CHIP 0.1MF CERAMIC CHIP 0.01MF	10% 10%	25V 50V
	*A-1632-655-A	A BOARD, COMPLETE (KV-20WS1	B)	C036 C037	1-126-965-11 1-164-346-11	CERAMIC CHIP 1MF	20%	50V 16V
		A BOARD, COMPLETE (KV-20WS1 A BOARD, COMPLETE (Greek Te		C038	1-164-346-11		E 100.	16V 50V
	*A-1632-652-A	A BOARD, COMPLETE (KV-20WS1	E)	C040 C041	1-163-205-00 1-163-037-11 1-126-965-11	CERAMIC CHIP 0.001M CERAMIC CHIP 0.022M ELECT 22MF		50V 50V 50V
	*A-1632-658-A	A BOARD, COMPLETE (KV-20WS1	K)	C042 C044	1-164-004-11 1-164-004-11	CERAMIC CHIP 0.1MF	10% 10%	25V 25V
		A BOARD, COMPLETE (KV-20WS1		C045		CERAMIC CHIP 2.2MF	5 0	16V
	*A-1632-656-A	A BOARD, COMPLETE (KV-20WS1	U)	C046 C099 C121	1-163-125-00 1-165-320-11 1-163-117-00		5% 10% 5%	50V 16V 50V
	< CAF	PACITOR >		C122	1-163-249-11		5%	50V
C001 C002	1-126-968-11	CERAMIC CHIP 0.022MF 10 ELECT 100MF 20	% 50V	C123 C124	1-163-249-11		5% 5%	50V 50V
C003 C004	1-164-492-11 1-163-034-00	CERAMIC CHIP 0.033MF	50V	C131 C135 C136	1-164-232-11 1-126-934-11 1-164-004-11		10% 20% 10%	50V 16V 25V
C005	1-163-105-00	CERAMIC CHIP 33PF 5% CERAMIC CHIP 33PF 5%		C136	1-126-967-11		20%	25V 16V
C007 C008	1-163-009-11 1-126-965-11	CERAMIC CHIP 0.001MF 10	% 50V	C201 C202	1-126-965-11 1-126-941-11	ELECT 22MF	20% 20%	50V 25V
C009 C010	1-126-961-11 1-163-033-91	ELECT 2.2MF 20 CERAMIC CHIP 0.022MF	% 50V 50V	C205 C206	1-126-963-11 1-126-933-11		20% 20%	50V 16V
C011 C012	1-163-243-11 1-163-113-00	CERAMIC CHIP 47PF 5% CERAMIC CHIP 68PF 5%		C207 C208	1-126-933-11 1-126-963-11		20% 20%	16V 50V
C013 C014	1-163-078-11 1-164-346-11			C210 C211	1-163-033-91 1-126-965-11		F 20%	50V 50V
C015	1-163-121-00	CERAMIC CHIP 150PF 5%	50V	C213	1-164-005-11			25V
C016 C017	1-162-638-11	CERAMIC CHIP 0.22MF CERAMIC CHIP 1MF	25V 16V	C214 C215	1-163-017-00 1-163-117-00		5%	50V 50V
C018 C019 C020	1-164-004-11 1-163-037-11 1-163-038-00			C216 C217	1-163-109-00 1-163-117-00		5% 5%	KV-20WS1B) 50V 50V
C021	1-164-005-11	CERAMIC CHIP 0.47MF	25V	C218	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C022 C024	1-126-960-11 1-126-965-11	ELECT 22MF 20	% 50V	C219 C220	1-126-964-11 1-164-004-11	CERAMIC CHIP 0.1MF	20% 10%	50V 25V
C025 C026	1-163-017-00 1-126-965-11	CERAMIC CHIP 0.0047MF 10 ELECT 22MF 20		C221	1-163-117-00	CERAMIC CHIP 100PF	5% (50V KV-20WS1B)
C027 C028	1-163-017-00 1-163-037-11	CERAMIC CHIP 0.0047MF 10 CERAMIC CHIP 0.022MF 10		C222 C223	1-126-934-11 1-163-133-00	ELECT 220MF CERAMIC CHIP 470PF	20% 5%	16V 50V
C029 C030	1-163-077-00 1-163-077-00	CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF	50V 50V	C224 C225	1-163-133-00 1-126-964-11	CERAMIC CHIP 470PF	5% 20%	50V 50V
C031	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C226	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V



The components identified by shading and marked \triangle are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque 🛧 sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION		<u>R</u>	EMARK
C227 C228 C229 C230 C231	1-163-009-11		0.25PF 50V 0.25PF 50V 10% 50V 10% 50V 10% 50V	C404 C405 C406 C408 C409	1-163-009-11	CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP	0.001MF 0.001MF 560PF	10% 10% 5% 5%	16V 50V 50V 50V 50V
C232 C233 C234 C235 C236	1-163-003-11		10% 50V 10% 50V 10% 50V 20% 50V 20% 50V	C410 C411 C412 C413 C414	1-126-967-11 1-164-232-11 1-164-232-11 1-163-009-11 1-126-967-11	-	0.01MF	20% 10% 10% 10% 20%	16V 50V 50V 50V 16V
C240 C242 C243 C244 C245	1-164-346-11 1-164-346-11	CERAMIC CHIP 0.47MF CERAMIC CHIP 1MF CERAMIC CHIP 1MF CERAMIC CHIP 1MF CERAMIC CHIP 1MF	10% 16V 16V 16V 16V 16V	C415 C416 C417 C418 C419	1-163-009-11 1-126-965-11 1-126-965-11 1-163-009-11 1-164-346-11	-	22MF 22MF 0.001MF	10% 20% 20% 10%	50V 50V 50V 50V 16V
C246 C247 C300 C301 C302	1-126-965-11 1-163-017-00 1-126-942-61 1-164-004-11 1-163-038-00	CERAMIC CHIP 0.0047MF	20% 50V 10% 50V 20% 25V 10% 25V 25V	C420 C421 C422 C423 C424	1-164-337-11 1-164-337-11	CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP	2.2MF 2.2MF 2.2MF	10%	16V 16V 16V 16V 50V
C303 C304 C305 C306 C307	1-126-965-11 1-164-232-11 1-124-257-00 1-136-164-00 1-163-077-00	ELECT 22MF CERAMIC CHIP 0.01MF ELECT 2.2MF FILM 0.082MF CERAMIC CHIP 0.1MF	20% 50V 10% 50V 20% 50V 5% 50V 10% 25V	C425 C500 C501 C502 C503	1-163-017-00 1-137-374-11 1-126-963-11 1-163-077-00 1-126-952-11	ELECT CERAMIC CHIP	0.047MF 4.7MF	10% 5% 20%	50V 50V 50V 50V 35V
C308 C309 C310 C311 C312	1-164-004-11 1-126-163-11 1-163-077-00 1-163-009-11 1-163-038-00	CERAMIC CHIP 0.1MF	10% 25V 20% 50V 10% 25V 10% 50V 25V	C504 C505 C506 C507 C508	1-126-968-11 1-126-941-11 1-163-009-11 1-126-965-11 1-130-785-11	ELECT CERAMIC CHIP ELECT	100MF 470MF 0.001MF 22MF 0.47MF	20% 20% 10% 20% 10%	50V 25V 50V 50V 100V
C313 C314 C315 C316 C317	1-163-137-00 1-164-004-11 1-163-038-00 1-163-038-00 1-163-038-00	CERAMIC CHIP 680PF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF	5% 50V 10% 25V 25V 25V 25V 25V	C602 🗘		FILM		10% 10% 20% 20% 20%	50V 25V 300V 300V 250V
C319 C320 C321 C322 C323	1-163-038-00 1-163-038-00 1-126-963-11 1-163-101-00 1-163-099-00		25V 25V 20% 50V 5% 50V 5% 50V	C605 A	1-117-700-11 1-162-964-91 1-162-964-91 1-104-665-11 1-136-538-11	CERAMIC CERAMIC ELECT	0.0022MF 0.0047MF 0.0047MF 100MF 0.001MF	20% 20% 3%	250V 250V 250V 25V 2KV
C324 C325 C326 C327 C328	1-164-232-11 1-164-489-91 1-163-005-11	CERAMIC CHIP 120PF CERAMIC CHIP 0.01MF CERAMIC CHIP 0.22MF CERAMIC CHIP 470PF CERAMIC CHIP 0.1MF	5% 50V 10% 50V 16V 10% 50V 25V	C612 C613 C614 C615 C616	1-107-929-11 1-162-318-11 1-104-666-11 1-124-347-00 1-162-116-00	CERAMIC ELECT ELECT	10MF 0.001MF 220MF 100MF 680PF	20% 10% 20% 20% 10%	100V 500V 25V 160V 2KV
C329 C330 C331 C332 C333		ELECT 22MF	10% 50V 25V 20% 25V 20% 50V 20% 16V	C617 C618 C619 C621 C622	1-107-929-11 1-102-228-00 1-126-942-61 1-163-017-00 1-126-965-11	CERAMIC ELECT CERAMIC CHIP	10MF 470PF 1000MF 0.0047MF 22MF	20% 10% 20% 10% 20%	100V 500V 25V 50V 50V
C341 C345 C347 C353 C355	1-163-139-00 1-164-232-11 1-163-117-00	CERAMIC CHIP 0.01MF CERAMIC CHIP 820PF CERAMIC CHIP 0.01MF CERAMIC CHIP 100PF CERAMIC CHIP 0.01MF	10% 50V 5% 50V 10% 50V 5% 50V 10% 50V	C623 C624 C625 C626 C627	1-111-055-91 1-163-017-00 1-126-967-11 1-102-228-00 1-111-097-11	CERAMIC CHIP ELECT CERAMIC	56MF 0.0047MF 47MF 470PF 0.0022F	20% 10% 20% 10% 20%	25V 50V 50V 500V 35V
C359 C360 C401 C402 C403	1-126-967-11 1-163-009-11	CERAMIC CHIP 0.0047MF	20% 50V 10% 50V 20% 16V 10% 50V 16V	C628 C629 C630 C631 C632	1-126-964-11 1-126-933-11 1-113-473-11 1-124-910-11 1-106-228-00	ELECT ELECT(BLOCK) ELECT	10MF 100MF 180MF 47MF 0.22MF	20% 20% 20% 20% 10%	50V 16V 400V 50V 100V

The components identified by shading and marked \triangle are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque A sont critiques pour la securite.

Ne les remplacer que par une piece portant le numero specifie.



REF.NO.	PART NO.	DESCRIPTION	ON		REMARK	REF.NO.	PART NO.	DESCRIPTION
C633	1-163-017-00	CERAMIC CHIP		10%	50V		< DIC	DDE >
C634	1-104-665-11		100MF	20%	25V		0 =40 0== =4	
C635 C636	1-111-097-11 1-102-228-00	ELECT CERAMIC	0.0022F 470PF	20% 10%	35V 500V	D001		DIODE LS5360HL HOLDER, LED; D001
C638	1-163-205-00	CERAMIC CHIP		10%	50V	D002	8-719-982-27	
0000		02141110 01111	0.002111		501	D003		DIODE DAN202K
C639	1-102-228-00	CERAMIC	470PF	10%	500V	D004	8-719-991-33	DIODE 1SS133T
C640	1-102-110-00	CERAMIC	220PF	10%	50V		0 =40 044 40	
C641 C644	1-106-228-00 1-106-383-00	MYLAR MYLAR	0.22MF 0.047MF	10% 10%	100V 100V	D005 D006	8-719-914-43 8-719-914-43	DIODE DAN202K DIODE DAN202K
C645	1-104-666-11	ELECT	220MF	20%	25V	D000	8-719-914-43	DIODE DAN202K
0010					201	D008	8-719-056-80	DIODE DTZ5.1B
C646	1-163-038-00	CERAMIC CHIP			25V	D009	8-719-056-80	DIODE DTZ5.1B
C647	1-163-038-00	CERAMIC CHIP		•••	25V	-010	0 =40 004 00	
C800 C801	1-126-772-11 1-129-719-00	ELECT FILM	1MF 0.027MF	20% 10%	250V 630V	D010 D011	8-719-991-33 8-719-056-80	DIODE 1SS133T DIODE DTZ5.1B
C801	1-136-085-00	FILM	0.027MF 0.016MF	3%	2KV	D011	8-719-992-02	DIODE RB705D
C002	1-130-003-00	FILM	0.01011	3.0	ZILV	D012	8-719-991-33	DIODE 1SS133T
C803	1-136-540-11	FILM	0.82MF	5%	200V	D017	8-719-991-33	DIODE 1SS133T
C804	1-126-959-11	ELECT	0.47MF	20%	50V			
C806	1-102-244-00	CERAMIC	220PF	10%	500V	D301	8-719-991-33	DIODE 1SS133T
C807	1-107-651-11		4.7MF 470PF	20%	250V	D302	8-719-991-33	DIODE 1SS133T
C809	1-162-134-11	CERAMIC	4/UPF	10%	2KV	D303 D304	8-719-991-33 8-719-914-44	DIODE 1SS133T DIODE DAP202K
C810	1-129-702-00	FILM	0.001MF	10%	400V	D305	8-719-914-44	
C811	1-102-228-00	CERAMIC	470PF	10%	500V	2000	V	
C812	1-163-009-11	CERAMIC CHIP		10%	50V	D306	8-719-056-80	DIODE DTZ5.1B
C813	1-162-116-00	CERAMIC	680PF	10%	2KV	D309	8-719-056-80	DIODE DTZ5.1B
C815	1-162-134-11	CERAMIC	470PF	10%	2KV	D314	8-719-914-43	DIODE DAN202K
C817	1-136-559-11	MYLAR	0.0047MF	10%	400V	D315 D338	8-719-914-43 8-719-914-43	DIODE DAN202K DIODE DAN202K
C818	1-136-540-11		0.82MF	5%	200V	D330	0-719-914-43	DIODE DANZUZK
C819	1-162-318-11	CERAMIC	0.001MF	10%	500V	D401	8-719-109-97	DIODE RD6.8ES-B2
C820	1-126-951-11		470MF	20%	35V	D402		DIODE RD6.8ES-B2
C823	1-106-375-12	MYLAR	0.022MF	10%	250V	D403		DIODE RD6.8ES-B2
C824	1 106 267 00	MVI AD	0.01мп	10%	400V	D404 D405	8-719-109-97 8-719-109-97	DIODE RD6.8ES-B2 DIODE RD6.8ES-B2
C828	1-106-367-00 1-104-709-11	MYLAR ELECT	0.01MF 4.7MF	0	160V	D405	0-/13-103-3/	DIODE KD0.0E9-PZ
C833	1-106-220-00	MYLAR	0.1MF	10%	100V	D406	8-719-109-97	DIODE RD6.8ES-B2
C839	1-136-200-11	FILM	0.15MF	5%	400V	D407	8-719-109-97	DIODE RD6.8ES-B2
C1200	1-136-165-00	FILM	0.1MF	5%	50V	D408		DIODE RD9.1ES-B2
G1 201	1 126 157 00	BILL	0 0000	F0.	E017	D409	8-719-110-14	
C1201 C1202	1-136-157-00 1-136-157-00	FILM FILM	0.022MF 0.022MF	5% 5%	50V 50V	D410	8-/19-110-14	DIODE RD9.1ES-B2
C1203	1-136-169-00	FILM	0.22MF	5%	50V	D411	8-719-991-33	DIODE 1SS133T
C1204	1-136-169-00	FILM	0.22MF	5%	50V	D412	8-719-109-97	DIODE RD6.8ES-B2
C1205	1-101-004-00	CERAMIC	0.01MF		50V	D413		DIODE 1SS133T
G1 00 C	1 101 004 00	CEDANTO	0 0110		F 0 1 1	D415		DIODE RD9.1ES-B2
C1206 C1215	1-101-004-00 1-136-173-00		0.01MF 0.47MF	5%	50V 50V	D416	8-/19-056-84	DIODE UDZ-TE-17-7.5B
C1215	1-137-366-11		0.0022MF	5%	50V	D417	8-719-056-84	DIODE UDZ-TE-17-7.5B
C1217	1-137-366-11		0.0022MF	5%	50V	D418		DIODE UDZ-TE-17-7.5B
						D419		DIODE UDZ-TE-17-7.5B
	< FII	LTER >				D421		DIODE RD6.8ES-B2
CF001	1_767_120_21	VIBRATOR, CE	ים אאדר <i>י</i>			D501	8-719-302-43	DIODE EPIX
CF200		TRAP, CERAMI		(1	(V-20WS1B)	D602	8-719-991-33	DIODE 1SS133T
01200	1 103 517 00		(0,011111)	(-		D603		DIODE RD6.8ES-B2
	< CON	NECTOR >				D604	8-719-302-43	
						D605	8-719-302-43	
CN001 CN081	*1-564-508-11 *1-568-881-51					D606	8-719-028-89	DIODE EK04-V1
CN081 CN082	*1-568-880-51					D607	8-719-046-78	DIODE EG-1Z-V1
CN201	*1-568-879-11					D608	8-719-302-43	
CN402	*1-564-512-11	PLUG, CONNEC	TOR 9P			D609		DIODE RU4AM-T3
						D610		DIODE GBU4JL-6088
CN405	*1-766-955-11			RD 11P		D612	8-719-046-76	DIODE RU3YX-LF-C4
	*1-580-844-11 1-508-765-00			מג (אי		D613	8-719-058-29	DIODE FMN-G12S
CN603	1-695-915-11			JII) JP		D613		DIODE RD6.8ES-B2
CN801	*1-580-798-11					D615	8-719-302-43	DIODE EL1Z
#1-4 A						D616		DIODE RD7.5ES-B2
CN1202	*1-568-882-51	PIN, CONNECT	OR 7P			D617	8-719-991-33	DIODE 1SS133T



The components identified by shading and marked ⚠ are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque 🛕 sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D619 D620 D621 D622 D623	8-719-046-78 8-719-110-14 8-719-058-38 8-719-991-33 8-719-924-16	DIODE EG-1Z-V1 DIODE RD9.1ES-B3 DIODE FMN-G12S DIODE 1SS133T		IC605 IC1200	4-202-373-01 8-759-473-02 4-202-373-01	SPRING, IC; IC605	rc1200
DC25	0 710 001 22	DIODE 144122m					101200
D626 D627	8-719-391-33 8-719-302-43 8-719-991-33	DIODE ISSISST DIODE EL1Z DIODE 1SS133T		J401	1-695-551-11	KET > SOCKET 21P	
D802 D803	8-719-302-43 8-719-945-80	DIODE EL1Z DIODE ERC06-15S			< COI	IL >	
D805 D806 D807 D809 D1200	8-719-928-08 8-719-302-43 8-719-991-33 1-535-143-31 8-719-109-72	DESCRIPTION DIODE EG-1Z-V1 DIODE RD9.1ES-B3 DIODE FMN-G12S DIODE 1SS133T DIODE MTZJ-T-77-24 DIODE 1SS133T DIODE EL1Z DIODE EL1Z DIODE ERC06-15S DIODE ERC06-15S DIODE ERD28-08S DIODE EL1Z DIODE ESS133T LEAD JUMPER (15MM) DIODE RD3.9ES-B2		L001 L003 L108 L111 L112	1-414-181-11 1-408-405-00 1-414-740-21 1-408-408-00 1-408-397-00	INDUCTOR 4.7UH INDUCTOR 4.7UH INDUCTOR 8.2UH	
	< FUS	SE >		L113	1-408-408-00	INDUCTOR 8.2UH INDUCTOR 5.6UH	(TTT 00T/G1D)
F601 ⚠	1-576-231-11	FUSE (4A 250V)		L201	1-535-303-00	LEAD, JUMPER (5.0MM)	(KV-20WS1B)
	< FER	RRITE BEAD >		т.301	1_410_989_11	INDUCTOR CHIP 0.47U	ī
FB001 FB002 FB003 FB600 FB601	1-412-911-11 1-412-911-11 1-412-911-11 1-410-397-21 1-410-397-21	INDUCTOR, FERRITE BEA INDUCTOR, FERRITE BEA INDUCTOR, FERRITE BEA INDUCTOR, FERRITE BEA FERRITE BEAD INDUCTOR FERRITE BEAD INDUCTOR INDUCTOR, FERRITE BEA LEAD, JUMPER (5.0MM) INDUCTOR, FERRITE BEA INDUCTOR, FERRITE INDUCTO	D D D 1.1UH 1.1UH	L302 L401 L402 L403	1-410-396-41 1-408-409-00 1-408-409-00 1-535-303-00	FERRITE BEAD INDUCTOR INDUCTOR 10UH INDUCTOR 10UH LEAD, JUMPER (5.0MM)	
FB602	1-412-911-11	INDUCTOR, FERRITE BEA	ח	L404 T405	1-535-303-00	LEAD, JUMPER (5.0MM) INDUCTOR 10UH	
FB604	1-535-303-00	LEAD, JUMPER (5.0MM)	_	L406	1-408-409-00	INDUCTOR 10UH	
FB605 FB606 FB607	1-412-911-11 1-412-911-11 1-412-911-11	INDUCTOR, FERRITE BEA INDUCTOR, FERRITE BEA INDUCTOR, FERRITE BEA	D D D	L407 L408	1-408-409-00 1-408-409-00	INDUCTOR 10UH INDUCTOR 10UH	
	< ENC	APSULATED FILTER >		L409 L410	1-410-985-11 1-408-409-00	INDUCTOR CHIP 0.22UH INDUCTOR 10UH	I
FL201	1-239-803-11	FILTER, EMI		L411 L412	1-408-409-00	INDUCTOR 10UH INDUCTOR CHIP 0.22UH	I
	< IC	>		T20T	1-412-525-31	INDUCTOR 10UH	
IC001	8-759-495-43	IC SDA5255-A031 (KV-20WS1A/	20WS1B/20WS1D/ 20WS1K/20WS1U) (KV-20WS1R) (Greek Text)	L609 L611 L612	1-414-743-21 1-414-743-21 1-412-522-41	INDUCTOR 47UH INDUCTOR 47UH INDUCTOR 5.6UH INDUCTOR 5.6UH	
		IC SDA5255-A032 IC SDA5255A026	(KV-20WS1R) (Greek Text)	L800	1-412-553-11	INDUCTOR 3.3MM	I
IC002		IC STZ4WU4FB6		L801 L802	1-535-303-00	LEAD, JUMPER (5.0MM) COIL, AIR-CORE	
IC003 IC004	8-742-014-10 8-759-073-00	HYB IC SBX1981-51		L803 L804		COIL, CHOKE 680UH COIL, DYNAMIC CONVERSI	LON GHOKE
IC005	8-759-510-54	IC PST572D		L805		LEAD, JUMPER (5.0MM)	ion chora
IC200		IC MSP3400C-PP-C6 (KV-20WS1A/20WS1D/ IC MSP3410D-PP-B3	20WS1K/20WS1R) 20WS1E/20WS1U)	L806 L807 L808		LEAD, JUMPER (5.0MM)	
TG001	0 850 500 01		20W51E/20W510)	L810	1-408-947-00		I
IC201 IC301	8-759-502-21 8-759-333-45	IC MC44002P		L811	1-412-525-31		
IC302 IC401	8-759-333-46 8-759-064-91	IC MC44140P IC NJM2233BL			< IC	LINK >	
IC501	8-759-192-71 4-202-373-01	IC STV9379 SPRING, IC; IC501		PS601 🛦	1-532-686-21	LINK, IC 2.7A (ICP-N' LINK, IC 2.7A (ICP-N' LINK, IC 2.7A (ICP-N'	75)
IC600		IC STR-S6707 SPRING, IC; IC600		15005 71		NSISTOR >	
	8-749-010-64	PHOTO COUPLER PC123F2		2222			
IC602 IC603	8-749-012-79 8-759-507-29			Q002 Q006 Q007	8-729-216-22	TRANSISTOR 2SC3052-EI TRANSISTOR 2SA1162-G TRANSISTOR 2SC3052-EI	
IC604	8-759-457-41	IC KA76L05Z		Q007 Q008		TRANSISTOR 2SC3052-EI	

	Α
j	

REF.NO. PART NO. DESCRIPTION REMARK REF.NO. PART NO. DESCRIPTION Q009 8-729-620-06 TRANSISTOR 2SC3052-EF R005 1-216-174-00 METAL GLAZE 100 5% 1/8W Q011 1-801-806-11 TRANSISTOR DTC144EKA R006 1-216-065-00 METAL GLAZE 4.7K 5% 1/10W Q012 8-729-620-06 TRANSISTOR 2SC3052-EF R007 1-216-089-00 METAL GLAZE 47K 5% 1/10W Q013 8-729-620-06 TRANSISTOR 2SC3052-EF R008 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W Q014 8-729-620-06 TRANSISTOR 2SC3052-EF R009 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W Q107 8-729-119-78 TRANSISTOR 2SC2785-HFE R010 1-216-031-00 METAL GLAZE 180 5% 1/10W	REMARK
Q009 8-729-620-06 TRANSISTOR 2SC3052-EF R005 1-216-174-00 METAL GLAZE 100 5% 1/8W Q011 1-801-806-11 TRANSISTOR DTC144EKA R006 1-216-065-00 METAL GLAZE 4.7K 5% 1/10W Q012 8-729-620-06 TRANSISTOR 2SC3052-EF R007 1-216-089-00 METAL GLAZE 47K 5% 1/10W Q013 8-729-620-06 TRANSISTOR 2SC3052-EF R008 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W Q014 8-729-620-06 TRANSISTOR 2SC3052-EF R009 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W Q107 8-729-119-78 TRANSISTOR 2SC2785-HFE R010 1-216-031-00 METAL GLAZE 180 5% 1/10W	
Q011 1-801-806-11 TRANSISTOR DTC144EKA R006 1-216-065-00 METAL GLAZE 4.7K 5% 1/10W Q012 8-729-620-06 TRANSISTOR 2SC3052-EF R007 1-216-089-00 METAL GLAZE 47K 5% 1/10W Q013 8-729-620-06 TRANSISTOR 2SC3052-EF R008 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W Q107 8-729-119-78 TRANSISTOR 2SC3052-EF R010 1-216-031-00 METAL GLAZE 2.2K 5% 1/10W Q107 8-729-119-78 TRANSISTOR 2SC2785-HFE	
Q110 8-729-620-06 TRANSISTOR 2SC3052-EF R011 1-216-073-00 METAL GLAZE 10K 5% 1/10W Q118 8-729-620-06 TRANSISTOR 2SC3052-EF R012 1-249-437-11 CARBON 47K 5% 1/4W Q200 8-729-900-53 TRANSISTOR DTC114EKA R013 1-216-069-00 METAL GLAZE 6.8K 5% 1/10W Q201 8-729-027-56 TRANSISTOR DTC143TKA-T146 R014 1-216-071-00 METAL GLAZE 8.2K 5% 1/10W Q202 8-729-027-56 TRANSISTOR DTC143TKA-T146 R015 1-216-296-00 CONDUCTOR, CHIP	
Q204 8-729-620-06 TRANSISTOR 2SC3052-EF	
Q210 8-729-620-06 TRANSISTOR 2SC3052-EF R021 1-216-258-00 METAL GLAZE 330K 5% 1/8W Q300 8-729-620-06 TRANSISTOR 2SC3052-EF R022 1-216-081-00 METAL GLAZE 22K 5% 1/10W Q304 8-729-900-53 TRANSISTOR DTC114EK R023 1-216-041-00 METAL GLAZE 470 5% 1/10W Q306 8-729-900-53 TRANSISTOR DTC114EK R025 1-216-091-00 METAL GLAZE 56K 5% 1/10W Q309 8-729-900-53 TRANSISTOR DTC114EK R026 1-216-081-00 METAL GLAZE 3.9K 5% 1/10W Q310 8-729-216-22 TRANSISTOR 2SA1162-G R027 1-216-081-00 METAL GLAZE 22K 5% 1/10W Q310 8-729-620-06 TRANSISTOR 2SC3052-EF R029 1-216-039-00 METAL GLAZE 22K 5% 1/10W Q311 8-729-620-06 TRANSISTOR 2SC3052-EF R030 1-216-025-00 METAL GLAZE 100 5% 1/10W	
Q309 8-729-216-22 TRANSISTOR 2SA1162-G R027 1-216-081-00 METAL GLAZE 22K 5% 1/10W Q310 8-729-620-06 TRANSISTOR 2SC3052-EF R029 1-216-039-00 METAL GLAZE 390 5% 1/10W Q311 8-729-620-06 TRANSISTOR 2SC3052-EF R030 1-215-900-11 METAL OXIDE 22K 5% 2W Q312 8-729-620-06 TRANSISTOR 2SC3052-EF R031 1-216-025-00 METAL GLAZE 100 5% 1/10W Q402 8-729-620-06 TRANSISTOR 2SC3052-EF R032 1-216-025-00 METAL GLAZE 100 5% 1/10W	
Q403 8-729-620-06 TRANSISTOR 2SC3052-EF R033 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W Q404 8-729-620-06 TRANSISTOR 2SC3052-EF R034 1-216-073-00 METAL GLAZE 10K 5% 1/10W Q405 8-729-620-06 TRANSISTOR 2SC3052-EF R036 1-216-295-00 CONDUCTOR, CHIP Q406 8-729-620-06 TRANSISTOR 2SC3052-EF R037 1-216-093-00 METAL GLAZE 68K 5% 1/10W Q407 8-729-620-06 TRANSISTOR 2SC3052-EF R038 1-216-295-00 CONDUCTOR, CHIP	
Q408 8-729-620-06 TRANSISTOR 2SC3052-EF R040 1-216-073-00 METAL GLAZE 10K 5% 1/10W Q409 8-729-620-06 TRANSISTOR 2SC3052-EF R041 1-216-206-00 METAL GLAZE 2.2K 5% 1/8W Q410 8-729-026-49 TRANSISTOR 2SA1037AK-T146-R R042 1-216-027-00 METAL GLAZE 120 5% 1/10W Q411 8-729-620-06 TRANSISTOR 2SC3052-EF R043 1-216-022-00 METAL GLAZE 75 5% 1/10W Q500 8-729-017-06 TRANSISTOR 2SC4793 R044 1-216-073-00 METAL GLAZE 10K 5% 1/10W R0501 8-729-620-06 TRANSISTOR 2SC3052-FF R045 1-216-081-00 METAL GLAZE 10K 5% 1/10W	
Q501 8-729-620-06 TRANSISTOR 2SC3052-EF R045 1-216-081-00 METAL GLAZE 22K 5% 1/10W R040 1-216-254-00 METAL GLAZE 22K 5% 1/8W R040 1-216-254-00 METAL GLAZE 220K 5% 1/8W R040 8-729-320-28 TRANSISTOR 2SC3852A R047 1-216-077-91 METAL GLAZE 15K 5% 1/10W R040 1-216-077-91 METAL GLAZE 15K 5% 1/10W R040 8-729-027-08 TRANSISTOR 2SC2389STP-R R049 1-216-041-00 METAL GLAZE 470 5% 1/10W R040 1-216-089-00 METAL GLAZE 47K 5% 1/10W R050 1-216-089-00 METAL GLAZE 47K 5	
Q606 8-729-029-56 TRANSISTOR DTA144ESA R051 1-216-174-00 METAL GLAZE 100 5% 1/8W Q608 8-729-027-56 TRANSISTOR DTC143TKA-T146 R052 1-216-073-00 METAL GLAZE 10K 5% 1/10W Q617 8-729-119-78 TRANSISTOR 2SC2785-HFE R053 1-216-045-00 METAL GLAZE 680 5% 1/10W Q801 8-729-140-50 TRANSISTOR 2SC3209LK R054 1-216-129-00 METAL GLAZE 2.2M 5% 1/10W Q802 8-729-041-25 TRANSISTOR 2SC3209LK R057 1-216-198-91 METAL GLAZE 1K 5% 1/8W 4-382-854-11 SCREW (M3X10), P, SW (+);Q802	
Q803 1-801-806-11 TRANSISTOR DTC144EKA R060 1-216-061-00 METAL GLAZE 1K 5% 1/8W Q804 8-729-019-01 TRANSISTOR 2SD2394-EF R061 1-216-073-00 METAL GLAZE 10K 5% 1/10W *4-368-683-11 SPRING, TRANSISTOR; Q804 R062 1-216-073-00 METAL GLAZE 10K 5% 1/10W Q805 8-729-255-12 TRANSISTOR 2SC2551-0 R063 1-216-061-00 METAL GLAZE 3.3K 5% 1/10W Q810 8-729-027-38 TRANSISTOR DTA144EKA-T146	
R064 1-216-222-00 METAL GLAZE 10K 5% 1/8W Q811 1-801-806-11 TRANSISTOR DTC144EKA R065 1-216-073-00 METAL GLAZE 10K 5% 1/10W Q1200 8-729-620-06 TRANSISTOR 2SC3052-EF R066 1-216-073-00 METAL GLAZE 10K 5% 1/10W Q1201 8-729-620-06 TRANSISTOR 2SC3052-EF R067 1-216-081-00 METAL GLAZE 2ZK 5% 1/10W R068 1-216-073-00 METAL GLAZE 10K 5% 1/10W	
<pre>< RESISTOR ></pre>	
R001 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W R070 1-216-049-00 METAL GLAZE 1K 5% 1/10W R002 1-216-025-00 METAL GLAZE 100 5% 1/10W R071 1-216-174-00 METAL GLAZE 100 5% 1/8W R003 1-216-025-00 METAL GLAZE 100 5% 1/10W R072 1-216-174-00 METAL GLAZE 100 5% 1/8W R004 1-216-065-00 METAL GLAZE 4.7K 5% 1/10W R073 1-216-025-00 METAL GLAZE 100 5% 1/10W	



REF.NO.	PART NO.	DESCRIPTION	<u>ON</u>		REMARK	REF.NO.	PART NO.	DESCRIPTIO	N		REMARK
R074 R078 R088	1-216-025-00 1-216-071-00 1-216-043-91		100 8.2K 560	5% 5% 5%	1/10W 1/10W 1/10W	R231	1-216-035-00	METAL GLAZE	270	5%	1/10W (KV-20WS1B)
R089	1-216-043-91		560	5%	1/10W 1/10W	R236	1-216-089-00	אויי מו איי	47K	5%	1/10W
R090	1-216-043-91		560	5%	1/10W 1/10W	R237	1-216-093-00	METAL GLAZE	68K	5%	1/10W
K090	1-210-043-31	METAL GLAZE	500	20	1/10W	R237	1-216-093-00	METAL GLAZE	47K	5%	1/10W 1/10W
R097	1-216-051-00	METAL GLAZE	1.2K	5 9	1/10W	R230	1-216-093-00		68K	5%	1/10W 1/10W
R098	1-216-051-00		1.2K	5%	1/10W 1/10W	R240	1-216-073-00	METAL GLAZE	10K	5%	1/10W 1/10W
						R240	1-210-0/3-00	METAL GLAZE	TOK	26	1/10W
R099	1-216-200-11		1.2K	5%	1/8W	D201	1 016 072 00	WEMAT CTACE	1.072	F0.	1 /1 01/1
R110	1-216-174-00		100	5%	1/8W	R301	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R111	1-216-174-00	METAL GLAZE	100	5%	1/8W	R302	1-216-037-00	METAL GLAZE	330	5%	1/10W
-440	4 044 050 00		4 0		4 /4 0	R303	1-216-090-00	METAL GLAZE	51K	5%	1/10W
R112	1-216-073-00		10K	5%	1/10W	R304	1-216-025-00	METAL GLAZE	100	5%	1/10W
R113	1-216-113-00	METAL GLAZE		5%	1/10W	R305	1-216-025-00	METAL GLAZE	100	5%	1/10W
R114	1-216-057-00		2.2K	5%	1/10W				4 = 4		4 /4 4
R115	1-216-190-00	METAL GLAZE	470	5%	1/8W	R306	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R116	1-216-049-00	METAL GLAZE	1K	5%	1/10W	R307	1-216-121-91		1M	5%	1/10W
						R308	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R117	1-216-222-00	METAL GLAZE	10K	5%	1/8W	R309	1-216-121-91		1M	5%	1/10W
R118	1-216-069-00		6.8K	5%	1/10W	R310	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R119	1-216-031-00		180	5%	1/10W						
R120	1-216-041-00	METAL GLAZE	470	5%	1/10W	R311	1-216-025-00	METAL GLAZE	100	5%	1/10W
R124	1-216-025-00	METAL GLAZE	100	5%	1/10W	R312	1-216-097-00	METAL GLAZE	100K	5%	1/10W
						R313	1-216-045-00	METAL GLAZE	680	5%	1/10W
R125	1-216-025-00	METAL GLAZE	100	5%	1/10W	R314	1-216-045-00	METAL GLAZE	680	5%	1/10W
R126	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	R315	1-216-045-00	METAL GLAZE	680	5%	1/10W
R134	1-216-037-00	METAL GLAZE	330	5%	1/10W						
R163	1-216-029-00	METAL GLAZE	150	5%	1/10W	R316	1-216-033-00	METAL GLAZE	220	5%	1/10W
R174	1-216-033-00		220	5%	1/10W	R317	1-216-033-00	METAL GLAZE	220	5%	1/10W
					_, _,	R318	1-216-021-00	METAL GLAZE	68	5%	1/10W
R200	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	R322	1-216-022-00	METAL GLAZE	75	5%	1/10W
R202	1-216-097-00			5%	1/10W	R323	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R203	1-216-077-00		15K	5%	1/10W	NO25	1 210 005 00		1/10	30	1/1011
R204	1-216-077-00	METAL GLAZE	15K	5%	1/10W	R324	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R205	1-216-295-00	CONDUCTOR, CH		J.0	1/1011	R325	1-216-089-00	METAL GLAZE	47K	5%	1/10W
RZ03	1-210-233-00	CONDUCTOR, CI	111			R326	1-216-041-00	METAL GLAZE	470	5%	1/10W
R206	1-249-399-11	CARBON	33	5%	1/4W	R327	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R208	1-216-049-00	METAL GLAZE	33 1K	5%	1/10W	R327	1-216-073-00	METAL GLAZE	100K	5% 5%	1/10W 1/10W
R206	1-216-057-00	METAL GLAZE		5%	1/10W 1/10W	K320	1-210-0/3-00	METAL GLAZE	TOK	26	1/10W
			2.2K			D220	1 016 075 00	WEMAT CTACE	1 077	F0.	1 /1 01/1
R210	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	R329	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R211	1-216-073-00	METAL GLAZE	10K	5%	1/10W	R330	1-216-295-00	CONDUCTOR, CI		- 0	1 /0
5013	1 016 184 00	VERNI CI 100	100	F0.	1 /07-7	R331	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R213	1-216-174-00		100	5%	1/8W	R333	1-216-037-00	METAL GLAZE	330	5%	1/10W
R214	1-216-174-00	METAL GLAZE	100	5%	1/8W	R334	1-216-033-00	METAL GLAZE	220	5%	1/10W
R215	1-216-073-00	METAL GLAZE	10K	5%	1/10W		1 014 005 00		100		4 /4 0
R218	1-216-037-00	METAL GLAZE	330	5%	1/10W	R335	1-216-025-00	METAL GLAZE	100	5%	1/10W
					(KV-20WS1B)	R336	1-216-025-00		100	5%	1/10W
						R337	1-216-025-00		100		1/10W
R219	1-216-049-00	METAL GLAZE	1K	5%	1/10W	R338	1-216-071-00		8.2K		1/10W
					(KV-20WS1B)	R339	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R220	1-216-045-00	METAL GLAZE	680	5%	1/10W						
					(KV-20WS1B)	R340	1-216-246-00		100K		1/8W
R221	1-216-033-00	METAL GLAZE	220	5%	1/10W	R341	1-216-069-00		6.8K		1/10W
					(KV-20WS1B)	R342	1-216-186-00		330	5%	1/8W
						R343		CONDUCTOR, CI			
R222	1-216-001-00	METAL GLAZE	10	5%	1/10W	R344	1-216-295-00	CONDUCTOR, CI	HIP		
					(KV-20WS1B)			•			
R223	1-216-041-00	METAL GLAZE	470	5%	1/10W	R345	1-216-089-00	METAL GLAZE	47K	5%	1/10W
					(KV-20WS1B)	R351	1-218-463-11		8.2M		1/10W
R224	1-216-025-00	METAL GLAZE	100	5%	1/10W	R354	1-216-033-00		220	5%	1/10W
	1 210 023 00		-00	J 0	(KV-20WS1B)	R355	1-216-689-11		39K	5%	1/10W
					(7/1 TOUDTD)	R359	1-216-101-00		150K		1/10W
R225	1-216-037-00	METAL CLAZE	330	5%	1/10W	1000	1 210 101 00	GUALE	1301	J 0	-/
R225	1-216-037-00		22K	5%	1/10W 1/10W	R360	1-216-049-00	Mምጥል፣. ረ፤ አማው	1K	5%	1/10W
R220 R227	1-216-081-00		22K 22K	5%	1/10W 1/10W	R361	1-216-049-00		75	5% 5%	1/10W 1/10W
R227 R228	1-216-061-00		3.3K		1/10W 1/10W	R362	1-216-022-00		75 75	5% 5%	1/10W 1/10W
K220	T-5T0-00T-00	METAT GPWZE	J. JK	26							
					(KV-20WS1B)	R363	1-216-022-00		75	5% =%	1/10W
Dago	1 016 000 00	MEMAT CEASE	1 077	E 0.	1 /1 01/1	R364	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R229	1-216-073-00	METAL GLAZE	10K	5%	1/10W	D3CE	1 016 000 00	VIII	4 17	E0.	1 /1 0***
D220	1 016 005 00	WEMAT CTAGE	100	E0:	(KV-20WS1B)	R365	1-216-089-00		47K	5%	1/10W
R230	1-216-025-00	METAL GLAZE	100	5%	1/10W	R366	1-216-041-00		470	5%	1/10W
					(KV-20WS1B)	R367	1-216-081-00	METAL GLAZE	22K	5%	1/10W
						I					

The components identified by shading and marked \triangle are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque A sont critiques pour la securite.

Ne les remplacer que par une piece portant le numero specifie.

Λ

												' `
REF.NO.	PART NO.	DESCRIPTIO	<u>N</u>		REMARK	REF.NO.	PART NO.	DESCRIPT	ION			REMARK
R368 R369	1-216-089-00 1-216-238-91	METAL GLAZE METAL GLAZE	47K 47K	5% 5%	1/10W 1/8W	R604 R605	1-215-902-11 1-216-363-00	METAL OXIDE	47K 0.33	5% 5%	2W 2W	F F
R371 R372 R401 R402 R403	1-216-192-00 1-216-043-91 1-216-041-00 1-247-807-31 1-247-807-31	METAL GLAZE CARBON	560 560 470 100 100	5% 5% 5% 5% 5%	1/8W 1/10W 1/10W 1/4W 1/4W	R606 R607 R608 R609 R610	1-535-143-11 1-215-860-11 1-216-365-00 1-249-420-11 1-249-417-11	METAL OXIDE	(10.0MM 33 0.47 1.8K 1K	M) 5% 5% 5% 5%	1W 2W 1/4W 1/4W	F F
R404 R405 R406 R407 R408	1-216-022-00 1-216-113-00 1-216-091-00 1-216-691-11 1-216-691-11	METAL CHIP	75 470K 56K 47K 47K		1/10W 1/10W 1/10W 1/10W 1/10W	R613	1-216-354-11 1-260-135-11 1-249-417-11 1-218-265-11 1-216-073-00	CARBON CARBON METAL	2.7 1M 1K 8.2M 10K	5% 5% 5% 5%	1W 1/2W 1/4W 1W 1/10W	F
R409 R410 R411 R412 R413	1-216-691-11 1-216-022-00 1-216-091-00 1-216-041-00 1-216-113-00	METAL GLAZE METAL GLAZE	47K 75 56K 470 470K	0.50% 5% 5% 5% 5%	1/10W 1/10W 1/10W 1/10W 1/10W	R616 R617 R618 R619 R620	1-215-479-00 1-215-877-11 1-247-863-91 1-249-424-11 1-247-895-91	METAL METAL OXIDE CARBON CARBON CARBON	22K 22K	1% 5% 5% 5% 5%	1/4W 1W 1/4W 1/4W 1/4W	F
R414 R415 R416 R417 R418	1-260-311-11 1-260-311-11 1-216-022-00 1-216-174-00 1-216-113-00	CARBON	39 39 75 100 470K	5% 5% 5% 5% 5%	1/2W 1/2W 1/10W 1/8W 1/10W	R621 R622 R623 R625 R626	1-216-057-00 1-249-437-11 1-216-065-00 1-249-417-11 1-535-303-00	CARBON	2.2K 47K 4.7K 1K (5.0MM)	5%	1/10W 1/4W 1/10W 1/4W	
R419 R420 R421 R422 R423	1-216-113-00 1-247-807-31 1-247-807-31 1-216-691-11 1-216-691-11	CARBON METAL CHIP	470K 100 100 47K 47K		1/10W 1/4W 1/4W 1/10W 1/10W	R628 R629 R630 R631 R632	1-216-049-00 1-216-357-00 1-216-365-00 1-216-389-11 1-247-807-31	METAL OXIDE METAL OXIDE	1K 4.7 0.47 1 100	5% 5% 5% 5%	1/10W 1W 2W 3W 1/4W	F F
R424 R425 R426 R427 R428	1-216-691-11 1-216-651-11 1-216-651-11 1-216-651-11 1-216-053-00	METAL CHIP METAL CHIP	47K 1K 1K 1K 1.5K	0.50% 0.50%	1/10W 1/10W 1/10W 1/10W 1/10W	R634 R635 R636 R637 R638	1-249-397-11 1-249-437-11 1-249-417-11 1-247-815-91 1-247-863-91	CARBON CARBON CARBON CARBON CARBON	22 47K 1K 220 22K	5% 5% 5% 5%	1/4W 1/4W 1/4W 1/4W 1/4W	F
R429 R430 R431 R432 R433	1-216-188-00 1-216-001-00 1-216-041-00 1-216-049-00 1-216-051-00		390 10 470 1K 1.2K	5% 5% 5% 5%	1/8W 1/10W 1/10W 1/10W 1/10W	R639 R645 R646 R647 R648	1-249-429-11 1-249-422-11 1-249-382-11 1-202-933-61 1-249-407-11	CARBON CARBON CARBON FUSIBLE CARBON	10K 2.7K 1.2 0.1 150	5% 5% 5% 10% 5%	1/4W 1/4W 1/4W 1/2W 1/4W	
R434 R435 R436 R437 R501	1-216-061-00 1-216-049-00 1-216-001-00 1-216-017-00 1-216-079-00	METAL GLAZE METAL GLAZE METAL GLAZE	3.3K 1K 10 47 18K		1/10W 1/10W 1/10W 1/10W 1/10W	R651 R800 R801 R802 R803	1-215-902-11 1-215-886-11 1-216-049-00 1-216-174-00 1-216-081-00	METAL OXIDE METAL GLAZE METAL GLAZE	47K 100 1K 100 22K	5% 5% 5% 5%	2W 2W 1/10W 1/8W 1/10W	
R502 R503 R504 R505 R506	1-216-675-11 1-216-212-00 1-216-077-00 1-216-079-00 1-216-663-11	METAL GLAZE METAL GLAZE METAL GLAZE	10K 3.9K 15K 18K 3.3K		1/10W 1/8W 1/10W 1/10W 1/10W	R804 R806 R807 R808 R810	1-217-778-11 1-216-347-11 1-249-399-11 1-202-823-11 1-247-895-91	METAL OXIDE CARBON SOLID	1K 0.68 33 2.7K 470K	5% 10%	1W 1W 1/4W 1/2W 1/4W	F F
R507 R508 R509 R510 R513	1-216-350-11 1-215-865-11 1-249-383-11 1-216-093-00 1-249-431-11	METAL OXIDE CARBON METAL GLAZE	1.2 220 1.5 68K 15K	5% 5% 5% 5%	1W F 1W F 1/4W F 1/10W 1/4W	R813 R814 R815 R816 R819	1-216-295-00 1-217-811-11 1-216-105-91 1-216-366-00 1-249-441-11	METAL GLAZE METAL OXIDE	0.47 220K 0.56 100K	5% 5%	1/4W 1/10W 2W 1/4W	
R514 R515 R516 R517 R518	1-216-113-00 1-216-093-00 1-216-047-91 1-215-912-11 1-215-868-00	METAL GLAZE METAL GLAZE METAL OXIDE	470K 68K 820 150 680	5% 5% 5% 5%	1/10W 1/10W 1/10W 3W F 1W F	R820 R821 R823 R826 R828	1-249-923-11 1-216-115-00 1-249-413-11 1-216-296-00 1-216-103-00	METAL GLAZE CARBON CONDUCTOR, CH	1K 560K 470 HIP 180K	5%	1/4W 1/10W 1/4W	
R601 A R602 R603	1-202-962-11 1-249-417-11 1-215-875-11	CARBON	3.3 1K 10K	5% 5% 5%	10W 1/4W 1W F	R829 R831 R832	1-535-143-71 1-216-113-00 1-216-079-00		(7.5MM) 470K 18K	5%	1/10W 1/10W	



The components identified by shading and marked ⚠ are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque 🛕 sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	ON			REMARK	REF.NO.	PART NO.	DESCRIPTION		REMARK	
R834	1-249-441-11		 100K	5%	1/4W			*A-1638-109-A	C BOARD, COMPLETE			
R841	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F			******			
R844	1-260-115-11		22K	5%	1/2W	,		< CAF	PACITOR >			
R863 R864	1-216-085-00 1-216-452-11		33K 180	5% 5%	1/10V 2W	/ F	C700	1-136-189-00	FILM 0.1MF	10%	250V	
R1200	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W		C701	1-163-135-00	CERAMIC CHIP 560PF	5%	50V	
R1201	1-216-065-00	METAL GLAZE	4.7K	5%	1/100	I	C702 C703		CERAMIC CHIP 560PF CERAMIC CHIP 390PF	5% 5%	50V 50V	
R1202	1-216-081-00	METAL GLAZE	22K	5%	1/100	I	C703		CERAMIC CHIP 330FF	10%	50V	
R1203	1-216-065-00			5%	1/10	I	GEAF	1 162 005 11	GDD147G GUID 450D5	100	F 0	
R1204 R1205	1-216-222-00 1-216-222-00		10K 10K	5% 5%	1/8W 1/8W		C705 C706		CERAMIC CHIP 470PF CERAMIC CHIP 470PF	10% 10%	50V 50V	
R1206	1-216-079-00		18K	5%	1/10	I	C709	1-162-114-00	CERAMIC 0.0047MF		2KV	
R1207	1-216-043-91	METAT CT 17E	560	5%	1/100	1	C710 C711	1-104-664-11	ELECT 47MF CERAMIC CHIP 0.001MF	20% 5%	16V 50V	
R1207	1-212-849-00		4.7	5%	1/4W		C/11	1-103-141-00	CERAMIC CHIP 0.00IMF	J*o	301	
R1209	1-212-849-00		4.7	5%	1/4W	F	C712		CERAMIC CHIP 0.001MF	5%	50V	
R1211 R1212	1-249-424-11 1-249-424-11		3.9K 3.9K	5% 5%	1/4W 1/4W		C713 C714	1-163-141-00	CERAMIC CHIP 0.001MF CERAMIC 0.001MF	5% 10%	50V 500V	
							C715	1-162-114-00			2KV	
R1213 R1214	1-216-079-00 1-216-192-00		18K 560	5% 5%	1/10V 1/8W	I		< CON	NECTOR >			
	< REI	LAY >					CN071		PIN, CONNECTOR 6P			
DVC00 A	1 755 010 11	DEL 14					CN072	*1-568-880-51	PIN, CONNECTOR 5P			
RY600 🗥	1-755-018-11	RELAY					CN073 CN074		TAB (CONTACT) TAB (CONTACT)			
< SWITCH >								< DIC	,			
S001		SWITCH, TACT										
S002 S003		SWITCH, TACT: SWITCH, TACT:					D704 D705		DIODE 1SS133T-77 DIODE 1SS133T-77			
S003		SWITCH, TACT:					D705		DIODE 155133T-77			
S005		SWITCH, TACT					D707		DIODE 1SS133T-77			
S006 1-571-532-21 SWITCH, TACTIL							D708	8-719-991-33	DIODE 1SS133T-77			
S601 A 1-571-433-21 SWITCH, PUSH (AC POWER)							D709	8-719-991-33	DIODE 1SS133T-77			
	< TRA	ANSFORMER >						< CRI	SOCKET >			
	1-427-962-21 1-431-594-11						J701	↑ 1-251-311-11	SOCKET, CRT			
T801	1-437-090-31	HDT					< COIL >					
T802 <u>∧</u>	T802 A 1-453-254-11 TRANSFORMER ASSY, FLYBACK (NX-4004/M3A4)						L703	1-408-617-21	INDUCTOR 150UH			
					(1421 11	OI/HJAI)	L704	1-408-617-21				
	< THI	ERMISTOR >					< TRANSISTOR >					
тнр601 🛦	1-809-827-11	THERMISTOR, 1	POSITIV	E			0701	0_700 110 80	MDANGTOMOD OGGODOE *****	,		
	< TUI	NER >					Q701 Q702	8-729-119-78 8-729-119-78				
m	4 600 000 15	monton / /					Q703	8-729-119-78	TRANSISTOR 2SC2785-HFE			
TU101	1-693-338-11	TUNER/VIF (A		WS1 A / 2	20WS1D	20WS1E	Q704 Q705	8-729-906-70 8-729-906-70				
			•		OWS1K	20WS1R)	_					
		TUNER/VIF (FI				·20WS1B) ·20WS1U)	Q706	8-729-906-70 8-729-200-17				
	1-033-333-11	TOWER\ATE (O)	x. <i>j</i>		(A)	-ZUMBIU)	Q707 Q708	8-729-200-17 8-729-200-17				
	< CRY	YSTAL >					Q709	8-729-200-17				
X201		VIBRATOR, CR						< RES	GISTOR >			
X301 X302		VIBRATOR, CRY					R700	1-260-076-11	CARBON 10 5%	1/2	2W	
							R701	1-216-206-91	METAL GLAZE 2.2K 5%	1/8	BW	
*****************						******	R702	1-216-206-91				
							R705 R706	1-216-009-91 1-216-164-91		-,-		
										-, -		
							R707 R708	1-216-295-71 1-216-033-00	CONDUCTOR CHIP METAL GLAZE 220 5%	1/1	.0w	
							R709	1-216-182-00				
							1					







REF.NO.	PART NO.	DESCRIPTION	<u>on</u>		REMARK	REF.NO.	PART NO.	DESCRIPT	ION		REMARK
R710 R711	1-216-033-00 1-216-057-71		220 5% 2.2K 5%	1/10W 1/10W			*A-1648-010-A	U BOARD, COM			
R714	1-216-049-00		1K 5%	1/10W	ī	< CAPACITOR >					
R715 R716	1-249-417-11 1-216-198-91		1K 5% 1K 5%	1/4W 1/8W		C1500	1-130-776-00	RTT.M	0.47MF	5%	63V
R717	1-202-824-00	SOLID	3.3K 10	k 1/2W		C1501	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
R718	1-202-824-00	SOLID	3.3K 109	k 1/2₩		C1502 C1503	1-137-133-11 1-107-714-11		0.15MF 10MF	5% 20%	63V 16V
R719	1-202-824-00	SOLID	3.3K 109	k 1/2W		C1503	1-104-665-11		10MF	20%	25V
R720	1-215-923-00		10K 5%	3W	F	G1 F0 C	1 100 600 11	TT T C T	1.03477	200	0.544
R721 R722	1-215-923-00 1-215-923-00		10K 5% 10K 5%	3W 3W	F F	C1506 C1507	1-107-698-11 1-164-346-11	CERAMIC CHIP	10MF 1MF	20%	25V 16V
R727	1-202-824-00		3.3K 109	1/2W		C1508	1-126-967-11	ELECT	47MF	20%	16V
R729	1-216-368-11	METAL OXIDE	0.82 5%	2W	F	C1509 C1510	1-130-471-00 1-164-004-11	FILM CERAMIC CHIP	0.001MF 0.1MF	5% 10%	50V 25V
R732	1-202-846-00	SOLID	470K 109	1/2W	-						
R734 R735	1-216-206-00 1-216-206-00		2.2K 5% 2.2K 5%	1/8W 1/8W		C1511 C1512	1-130-014-00	FILM CERAMIC CHIP	470PF 0 1MF	5%	50V 25V
R736	1-249-421-11		2.2K 5%	1/4W		C1513		CERAMIC CHIP		10%	25V
R740	1-216-194-00	METAL CLASE	680 5%	1/8W		C1515 C1516		CERAMIC CHIP		5%	50V 50V
R741	1-216-045-00		680 5%	1/10W	I	CIJIO	1-103-243-11	CERAMIC CHIP	1/22	20	30 V
R742	1-216-049-00	METAL GLAZE	1K 5%	1/10W	I	C1517 C1518		CERAMIC CHIP		10% 5%	16V 50V
*****	******	******	******	******	*****	C1310			4/025	36	30V
	*A-1646-142-A	H BOARD, COM	PLETE			< CONNECTOR >					
		******				CN1500	*1-766-952-11	CONNECTOR, BO	OARD TO E	OARD 11P	
	< CAF	PACITOR >				< IC >					
C900	1-102-114-00		470PF	10%	50V	IC1500		IC MC14538BC			
C901 C906	1-102-114-00	CERAMIC LEAD, JUMPER	470PF (5.0MM)	10%	50V	IC1501	8-759-045-38	IC MC14538BC	P		
C907	1-535-303-00	LEAD, JUMPER (5.0	(5.0MM)			< COIL >					
C910	1-130-489-00		0.033MF	5%	50V	L1500	1-410-200-31	INDUCTOR CHI	P 4.7UH		
C911 1-130-489-00 FILM 0.033MF 5% 50V					< TRANSISTOR >						
< CONNECTOR >						Q1500					
CN906 *1-564-512-11 PLUG, CONNECTOR 9P					Q1501 8-729-620-06 TRANSISTOR 2SC3052-EF Q1502 8-729-620-06 TRANSISTOR 2SC3052-EF						
	< SOC	KET >				Q1503	8-729-029-66	TRANSISTOR D	TC114ESA		
Ј900	1-691-293-11	JACK				Q1504	8-729-900-53	TRANSISTOR D	TC114EK		
Ј902		TERMINAL BLO	CK, S 4P			Q1505	8-729-900-53	TRANSISTOR D	TC114EK		
	< CO1	L >					< RES	ISTOR >			
L900	1-408-409-00		10UH			R1500	1-249-416-11		820 5		
L901 L902	1-408-409-00 1-408-409-00		10UH 10UH			R1501 R1502	1-249-419-11 1-216-049-00		1.5K 5	% 1/4W % 1/10W	1
L903	1-408-409-00	INDUCTOR	10UH			R1503	1-216-093-00	METAL GLAZE	68K 5	% 1/10W	1
L904	1-535-143-61	LEAD JUMPER	(5.0MM)			R1504	1-216-091-00	METAL GLAZE	56K 5	% 1/10W	1
	< RES	SISTOR >				R1505 R1506	1-216-077-00 1-216-091-00			% 1/10W % 1/10W	
R904		LEAD, JUMPER				R1507	1-216-089-00	METAL GLAZE	47K 5	% 1/10W	1
R905 R909	1-535-303-00 1-249-437-11	LEAD, JUMPER	(5.0MM) 47K 5%	1 / 4 W		R1508 R1509	1-216-081-00 1-216-109-00		22K 5	% 1/10W % 1/10W	
R910	1-249-437-11	CARBON	47K 5%			R1510					
*******************							1-216-089-00 1-216-081-00			% 1/10W % 1/10W	
						R1511 R1512	1-216-049-00	METAL GLAZE	1K 5	% 1/10W	1
						R1513 R1514	1-216-083-00 1-216-067-00		27K 5	% 1/10W % 1/10W	
						R1515 R1516	1-216-069-00 1-216-049-00		6.8K 5	% 1/10W % 1/10W	
						11310	1 210 017 00	GUAUE		- 1/10N	•



The components identified by shading and marked ⚠ are critical for safety.

Replace only with the part number specified.

Les composants identifies par une trame et une marque 🛧 sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

REF.NO. PART NO. DESC	RIPTION	REMAR	REF.NO. PART NO. DESCRIPTION REI	MARK					
R1517 1-216-079-00 METAL GI R1518 1-216-071-00 METAL GI R1519 1-216-057-00 METAL GI	AZE 8.2K 5%	1/10W 1/10W 1/10W	MISCELLANEOUS *********						
R1520 1-216-073-00 METAL GI R1521 1-216-117-00 METAL GI R1523 1-216-256-00 METAL GI	AZE 680K 5% AZE 270K 5%	1/10W 1/10W 1/8W	↑ 1-416-425-11 COIL, DEGAUSSING 1-452-032-00 MAGNET, DISC; 10MM Ø 1-452-094-00 MAGNET, ROTATABLE DISK; 15MM Ø ↑ 1-452-787-11 NECK ASSY (NA222) ↑ 1-453-254-11 TRANSFORMER ASSY, FLYBACK						
< VARIABLE RES	ISTOR >		(NX-4004)	/M3A4)					
RV1500 1-241-786-11 RES, ADJ	, CARBON 22K		1-505-800-11 SPEAKER (5X9CM) 1-540-007-12 CAP ASSY, HIGH-VOLTAGE						
*********	******	*****	**	3 /2E017					
*A-1649-021-A K BOARD, *******	COMPLETE ******		(KV-20WS1A/20WS1B/20 20WS1E/20WS1K/20						
7-682-548-04 SCREW +P	3X8		·	OWS1U)					
< CAPACITOR >			1-693-338-11 TUNER (TUVIF) (AEP) (KV-20WS1A/20WS1D/20	OWS1E					
C280 1-126-163-11 ELECT C281 1-126-163-11 ELECT C282 1-130-785-11 MYLAR C283 1-126-163-11 ELECT C284 1-126-942-61 ELECT	4.7MF 4.7MF 0.47MF 4.7MF 1000MF	20% 50V 20% 50V 10% 100V 20% 50V 20% 25V	20WS1K/20WS1R) 1-693-340-11 TUNER (TUVIF) (FR) (KV-20WS1B) 1-693-339-11 TUNER (TUVIF) (UK) (KV-20WS1U) A 8-737-804-05 PICTURE TUBE (SD-281) (W46LEZ070X)						
C285 1-126-942-61 ELECT	1000MF	20% 25V	1-505-426-11 SPEAKER (10.6CM)						
C286 1-136-153-00 FILM C287 1-136-173-00 FILM	0.01MF 0.47MF	5% 50V 5% 50V	1-782-757-11 CABLE, SPEAKER (WITH GROMMET)						
C288 1-102-074-00 CERAMIC C289 1-102-074-00 CERAMIC	0.001MF 0.001MF	10% 50V 10% 50V	***************************************	*****					
< CONNECTOR >			ACCESSORIES AND PACKING MATERIALS ************************************						
CN223 *1-568-878-51 PIN, CON CN225 *1-568-882-51 PIN, CON			*4-039-905-02 BAG, PROTECTION *4-203-715-01 INDIVIDUAL CARTON *4-203-716-01 CUSHION (UPPER) (ASSY)						
< DIODE >			*4-203-719-01 CUSHION (LOWER) (ASSY) 4-203-822-41 MANUAL, INSTRUCTION (KV-20WS1A)						
D201 8-719-110-14 DIODE RD D202 8-719-109-97 DIODE RD			(IT)	ALIAN)					
< IC >			4-203-822-51 MANUAL, INSTRUCTION (KV-20WS1B) (FRENCH/GERMAN/ITALIAN/I	DUTCH)					
IC271 8-759-988-94 IC TDA20	50		4-203-822-11 MANUAL, INSTRUCTION (KV-20WS1D) (GERMAN/GREEK/DUTCH/ENGLISH/TU	RKISH)					
< TRANSISTOR >			4-203-579-71 MANUAL, INSTRUCTION (KV-20WS1E) (SPANISH/PORTUGUESE/DANISH/SWI FINNISH/NORWEGIAN/HUNGARIAN)	EDISH/					
Q205 8-729-119-78 TRANSIST	OR 2SC2785-HFE								
< RESISTOR >				GLISH)					
R216 1-249-441-11 CARBON R217 1-247-885-00 CARBON R280 1-249-429-11 CARBON	100K 5% 180K 5% 10K 5%	1/4W 1/4W 1/4W	4-203-822-91 MANUAL, INSTRUCTION (KV-20WS1K/20W (CZECH/ENGLISH/PORUSSIAN/BULGA	OLISH/					
R281 1-249-429-11 CARBON R282 1-249-436-11 CARBON	10K 5% 39K 5%	1/4W 1/4W	REMOTE COMMANDER ************************************						
R283 1-249-435-11 CARBON R284 1-249-435-11 CARBON R285 1-249-417-11 CARBON R288 1-216-353-00 METAL OX R289 1-249-429-11 CARBON	33K 5% 33K 5% 1K 5% 1DE 2.2 5% 10K 5%	1/4W 1/4W 1/4W 1W F 1/4W	1-473-194-11 COMMANDER, STANDARD TYPE (RM-836)	****					
R290 1-247-897-11 CARBON R291 1-249-425-11 CARBON	560K 5% 4.7K 5%	1/4W 1/4W							
